HELCOM

Baltic Marine Environment Protection Commission

USER GUIDE

Risk assessment tool for target species in ships' ballast water

Photo: Maiju Lehtniemi

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1. GENERAL INFORMATION

This user guide aims at explaining how to go through the risk assessment tool in order to conduct the risk assessment of transporting a selected list of target species in ballast water between ports of the HELCOM and OSPAR marine areas.

1.1 System Overview

The risk assessment tool was adopted in 2013 by the coastal countries of the Baltic Sea and North-East Atlantic regions as part (chapter 6) of the joint harmonized procedure on granting exemptions from ballast water treatment provisions of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) of the International Maritime Organisation (IMO). The tool comprises a database on observations of alien species and physical features in ports, a list of target alien species, a list of all marine alien species observed in port surveys in the region and an agreed risk assessment model. It will allow administrations and ship owners to quickly identify routes that may qualify for exemptions to the application of ballast water management for ships (regulation B-3) and those that are unlikely to. The online tool is jointly administered by the HELCOM and OSPAR Secretariats. It was originally developed with funding through the HELCOM ALIENS 2, ALIENS 3 and BALSAM projects by HELCOM Secretariat and Germany (BSH/Brockmann consult)

The aim of the tool is to provide a simple interface to conduct the risk assessment of transporting a selected list of target species in ballast water between ports. The level of risk is determined based on the presence of such species in the ports, their salinity tolerance and the salinity conditions in the ports. Once the level of risk is categorized it is used to evaluate the possibility of granting exemptions to the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), Regulation A-4 in the HELCOM/OSPAR area.

1. 2 Organization of the Manual

The user's manual consists of five sections: General Information, System Summary, Getting Started, Data Viewing, and Performing the Risk Assessment.

General Information section explains in general terms the system and the purpose for which it is intended.

System Summary section provides a general overview of the system. The summary outlines the uses of the system's software, system's configuration and user access levels

Getting Started section explains how to log in to the BALSAM Risk Assessment tool and start using the system. The section presents briefly the system menu.

Data Viewing section provides a detailed description of how the system can be used to view specific data using Search & Filter options.

Performing the Risk Assessment section describes how to use the risk assessment tool to determine if there is a high, medium or low risk scenario of spreading alien species by ships on voyages within ports in the Baltic and OSPAR area.

2. SYSTEM SUMMARY

System Summary section provides a general overview of the system. The uses of the system's software, system's configuration and user access levels are outlined.

2.1 System Configuration

The system is hosted on a Windows 2008 Server in an Oracle XE Database. The application has been built using APEX Software provided by Oracle. For more information, please refer to the Oracle APEX documentation[1].

2.2 User Access Levels

There are three different levels of access to the Risk Assessment Tool:

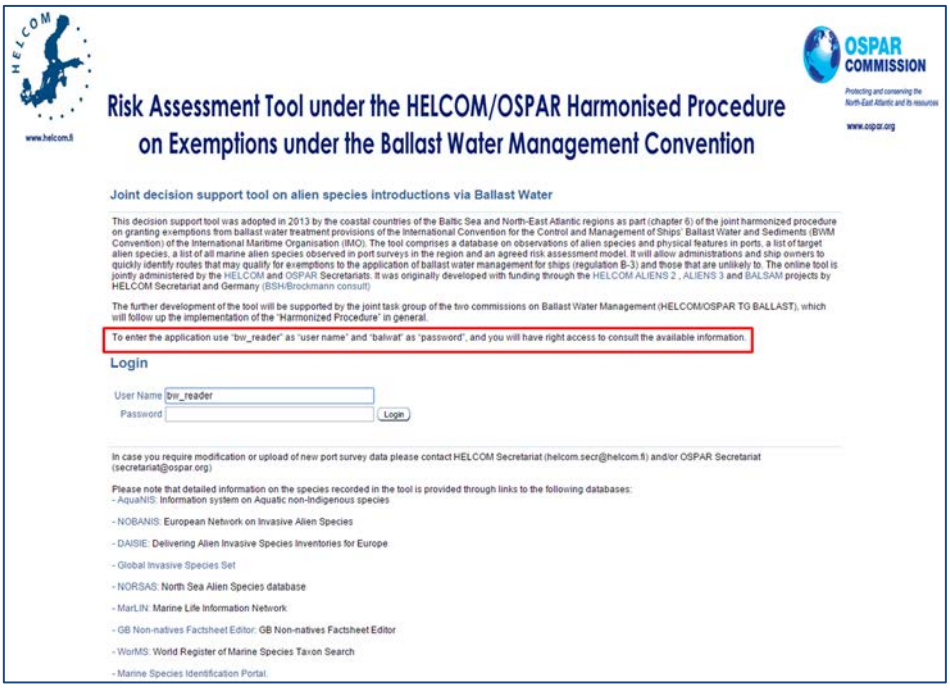
- Read only access – For all end users to view the data available in the tool and also perform the Risk Assessment. Credentials for this type of user are available in the login page of the system;
- Read and Write access – This access is available for experts to modify or correct specific data in the tool;
- Read, Write and Load Data access – This type of access is available for advanced users such as Data Managers & Data Administrators, who will Load new Data or Modify data when needed.

3. GETTING STARTED

Getting Started section explains how to log in to the BALSAM Risk Assessment Tool. The section also presents briefly the various tabs in the toil together with their purpose.

3.1 Login Page

In order to log in to the Risk Assessment Tool, the following URL in the browser is to be typed: http://jointbwmexemptions.org/ballast_water_RA. The credentials required to log in are provided in the screen. See screen shot below.


HELCOM
www.helcom.fi
OSPAR COMMISSION
Protecting and conserving the North-East Atlantic and its resources
www.ospar.org
Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure on Exemptions under the Ballast Water Management Convention
Joint decision support tool on alien species introductions via Ballast Water
This decision support tool was adopted in 2013 by the coastal countries of the Baltic Sea and North-East Atlantic regions as part (chapter 6) of the joint harmonized procedure on granting exemptions from ballast water treatment provisions of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) of the International Maritime Organisation (IMO). The tool comprises a database on observations of alien species and physical features in ports, a list of target alien species, a list of all marine alien species observed in port surveys in the region and an agreed risk assessment model. It will allow administrations and ship owners to quickly identify routes that may qualify for exemptions to the application of ballast water management for ships (regulation B-3) and those that are unlikely to. The online tool is jointly administered by the HELCOM and OSPAR Secretariats. It was originally developed with funding through the HELCOM ALIENS 2 , ALIENS 3 and BALSAM projects by HELCOM Secretariat and Germany (BSH/Brockmann consult)
The further development of the tool will be supported by the joint task group of the two commissions on Ballast Water Management (HELCOM/OSPAR TG BALLAST), which will follow up the implementation of the "Harmonized Procedure" in general.
To enter the application use "bw_reader" as "user name" and "ballwat" as "password", and you will have right access to consult the available information.
Login
User Name bw_reader
Password
Login
In case you require modification or upload of new port survey data please contact HELCOM Secretariat (helcom.secr@helcom.fi) and/or OSPAR Secretariat (secretariat@ospar.org)
Please note that detailed information on the species recorded in the tool is provided through links to the following databases:
- AquaNIS: Information system on Aquatic non-Indigenous species
- NOBANIS: European Network on Invasive Alien Species
- DAISIE: Delivering Alien Invasive Species Inventories for Europe
- Global Invasive Species Set
- NORSAS: North Sea Alien Species database
- MarLIN: Marine Life Information Network
- GB Non-natives Factsheet Editor: GB Non-natives Factsheet Editor
- WoRMS: World Register of Marine Species Taxon Search
- Marine Species Identification Portal

[1] http://www.oracle.com/technetwork/developer-tools/apex/documentation/index.html?ssSourceSiteId=opn

3.2 System Menus

The System is organized in eight tabs as follows:

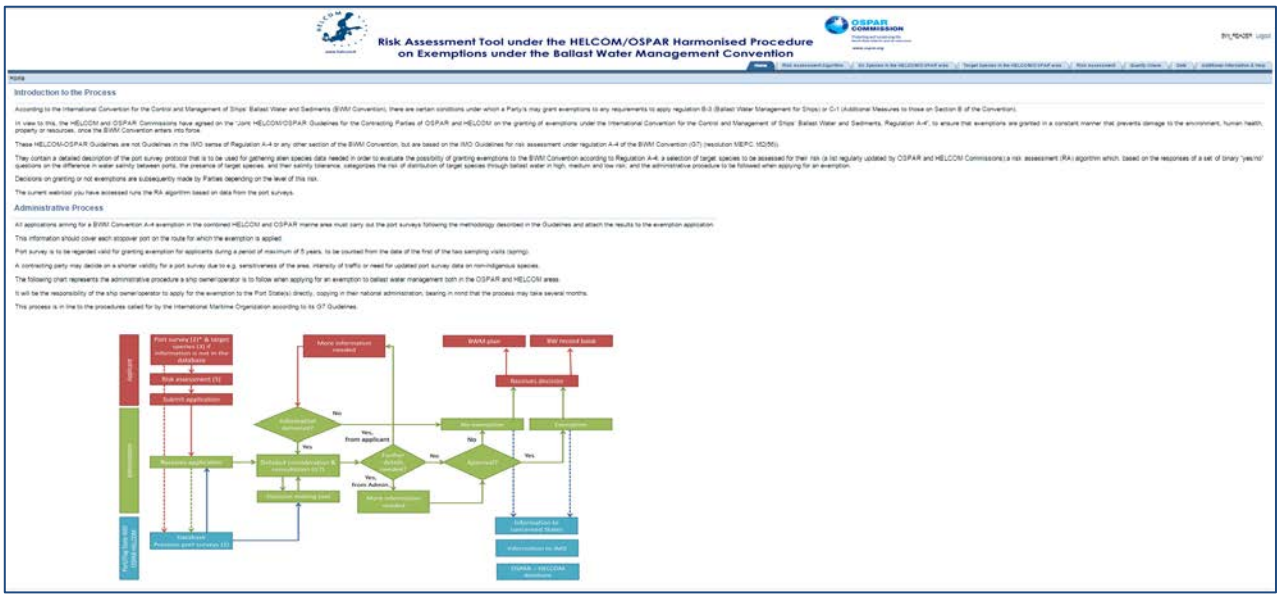
- Home tab;
- Risk Assessment Algorithm tab;
- All Species in the HELCOM/OSPAR area tab;
- Target Species in the HELCOM/OSPAR area tab;
- **Risk Assessment tab;**
- Quality Check tab;
- **Data tab;**
- Additional Information & Help tab.

The tabs on data visualization and risk assessment performance (in bold format in the previous list) will be separately treated, in dedicated chapters due to their relevance.

3.2.1 Home tab

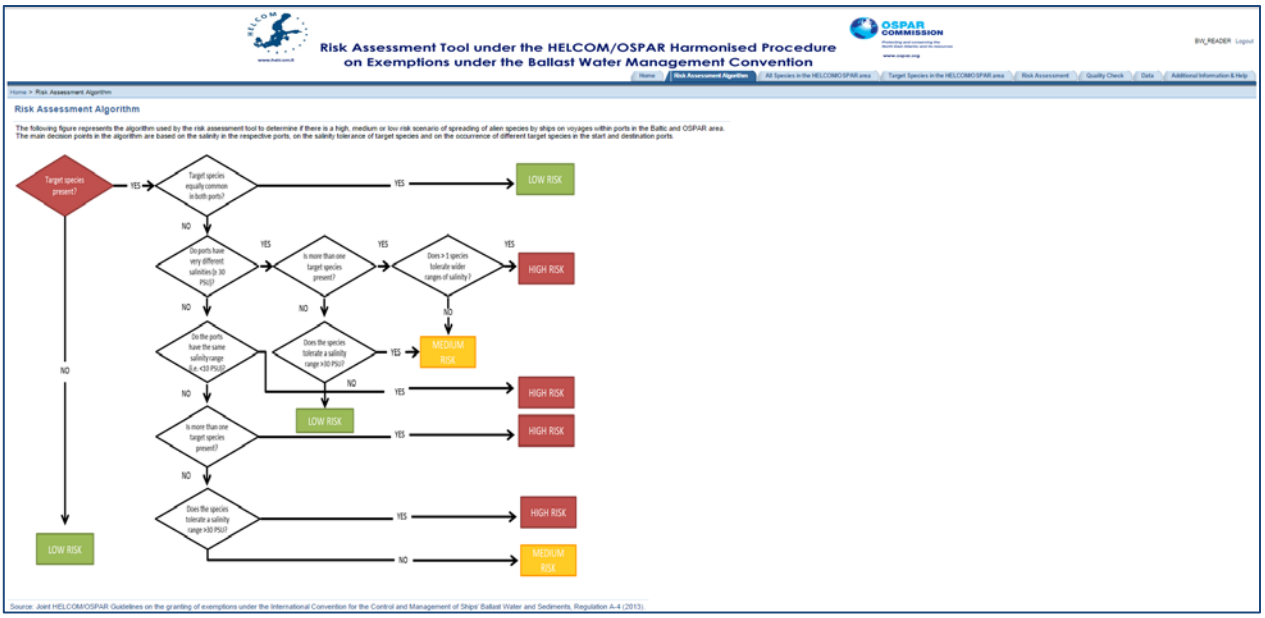
The Home Page is divided into two sections: Introduction and Administrative Process sections. In the first one, brief background information on the role of the risk assessment tool within the frame of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) is provided.

Subsequently, the Administrative Process to be conducted by all applications aiming for a BWM Convention A-4 exemption in the combined HELCOM and OSPAR marine area is detailed. See screen shot below.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure on Exemptions under the Ballast Water Management Convention
Introduction to the Process
Administrative Process

3.2.2 Risk Assessment Algorithm tab

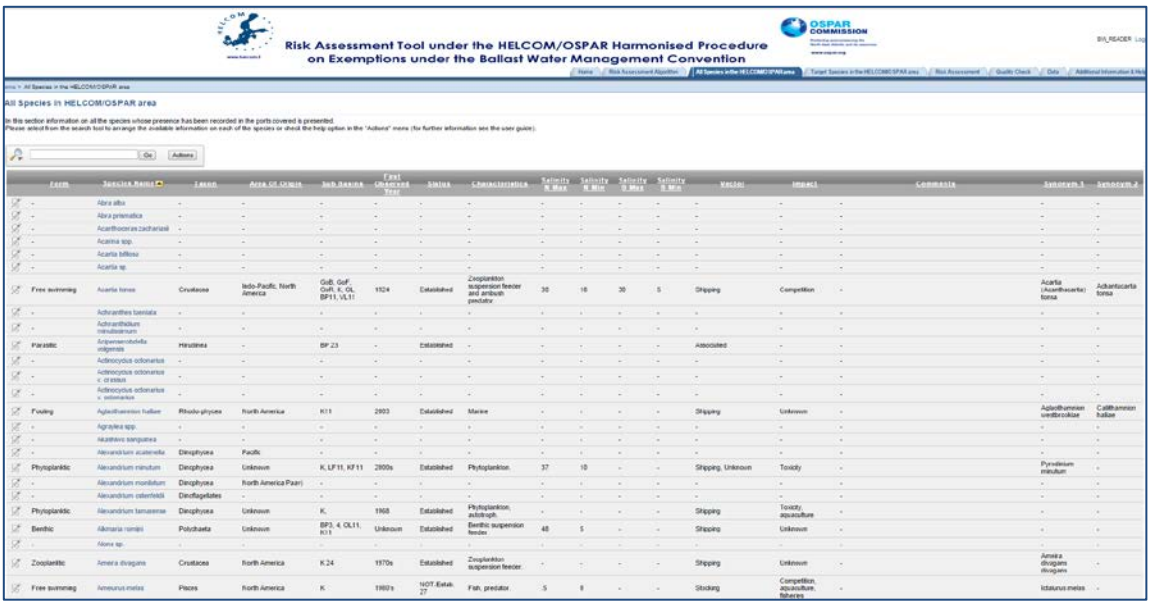
The figure representing the algorithm used by the risk assessment tool to determine if there is a high, medium or low risk scenario of spreading of alien species by ships on voyages within ports in the Baltic and OSPAR area is shown. This enables to understand the results from the risk assessment when performed. See screen shot below.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure on Exemptions under the Ballast Water Management Convention
Risk Assessment Algorithm
Target species present?
Target species equally common in both ports?
Do ports have very different salinities (≥ 30 PSU)?
Is more than one target species present?
Does > 1 species tolerate wider ranges of salinity?
Do the ports have the same salinity range (i.e. <10 PSU)?
Does the species tolerate a salinity range >30 PSU?
Is more than one target species present?
Does the species tolerate a salinity range >30 PSU?
YES
NO
LOW RISK
HIGH RISK
MEDIUM RISK

3.2.3 All Species in the HELCOM/OSPAR area tab

In this section, information all the species whose presence has been recorded in the HELCOM/OSPAR area is presented.

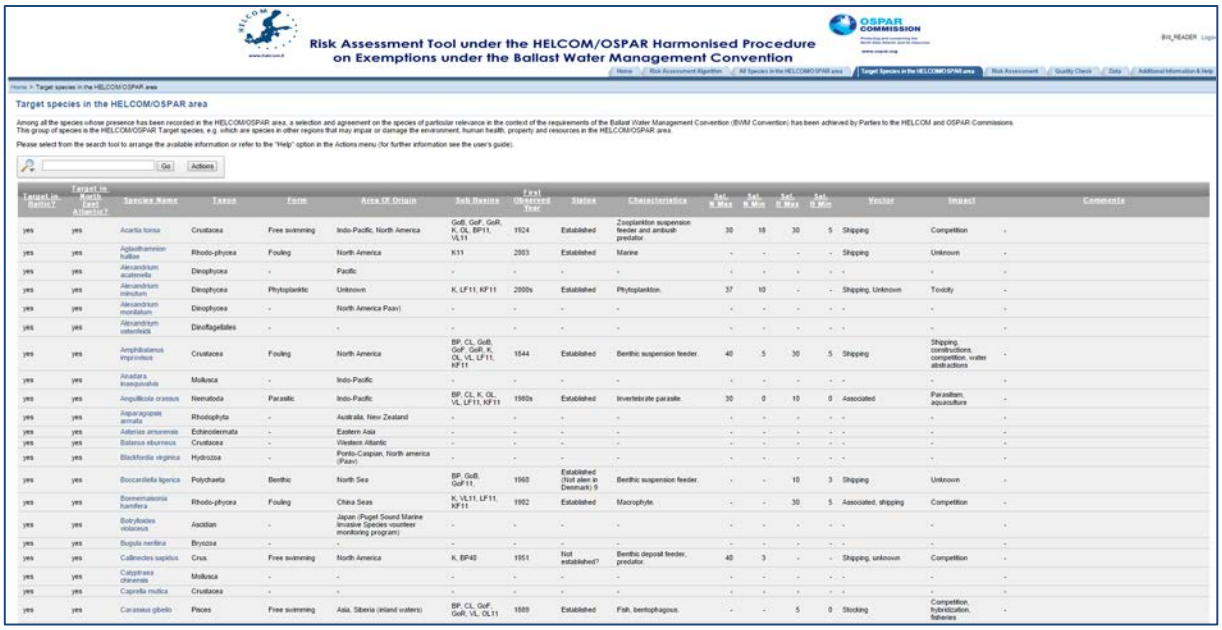
Users can search and view the desired data using the Search and Filter options. Filters can be set at multiple levels. See screen shot below. Please see section 4.5 with different examples to understand how to use the different options available.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure on Exemptions under the Ballast Water Management Convention
All Species in HELCOM/OSPAR area

3.2.4 Target Species in the HELCOM/OSPAR area tab

In this tab, the list of target species in the HELCOM/OSPAR area is provided. These species, agreed by HELCOM and OSPAR Commissions are considered to be of particular relevance in the context of the requirements of the BWM Convention and refer to species in other regions that may impair or damage the environment, human health, property and resources in the HELCOM/OSPAR area.

Users can search and view the desired data using the Search and Filter options. Filters can be set at multiple levels. See screen shot below. Please see section 4.5 with different examples to understand how to use the different options.

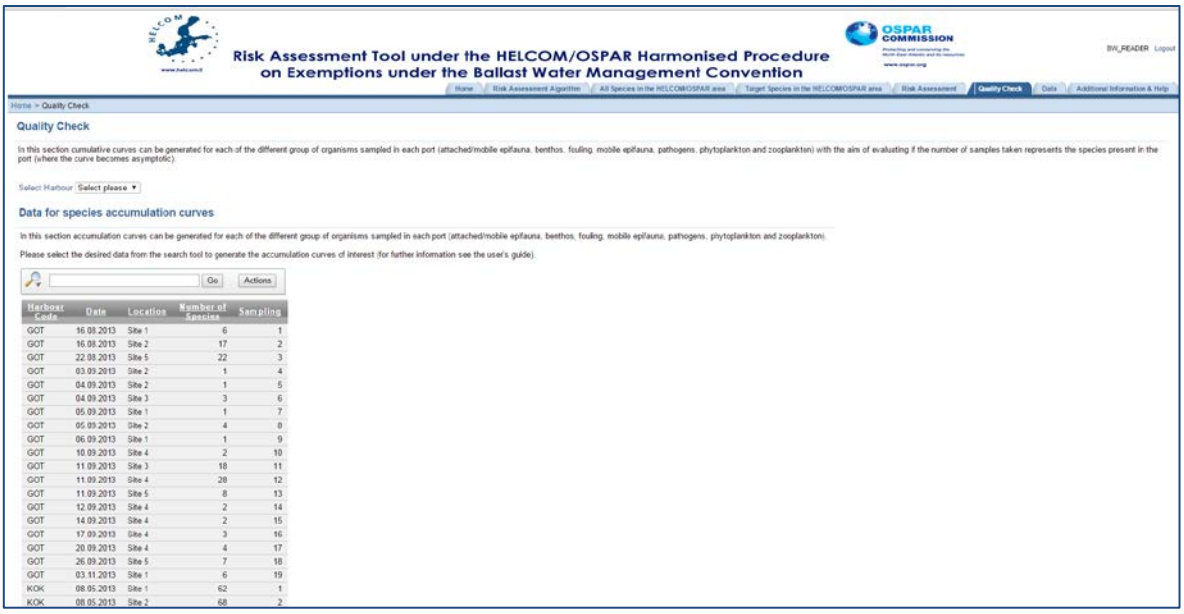

Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
OSPAR COMMISSION
Target species in the HELCOM/OSPAR area

3.2.5 Quality Check

The Port Survey Protocol as contained in the HELCOM/OSPAR Joint Harmonized Procedure establishes that species effort (accumulation) curves (e.g. Hayek and Buzas 2010[2]) are to be presented with the results of each survey to provide proof of adequate sampling effort in terms of number of samples taken from each site. In this tab of the tool, cumulative curves can be generated for each of the different group of organisms sampled in each port (attached/mobile epifauna, benthos, fouling, mobile epifauna, pathogens, phytoplankton and zooplankton) with the aim of evaluating if the number of samples taken represents the species present in the port.

Users can search and view the desired data using the Search and Filter options. Filters can be set at multiple levels. See screen shot below. Please see section 4.5 with different examples to understand how to use the different options.

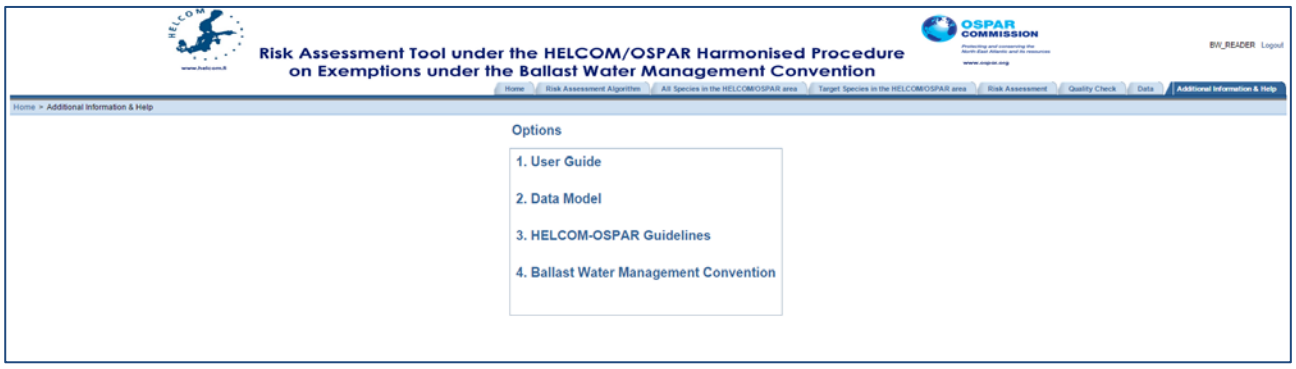
[2] Hayek, L. C. & M. A. Buzas, 2010. Surveying Natural Populations. Quantitative Tools for Assessing Biodiversity. 2nd Edition. Columbia University Press.

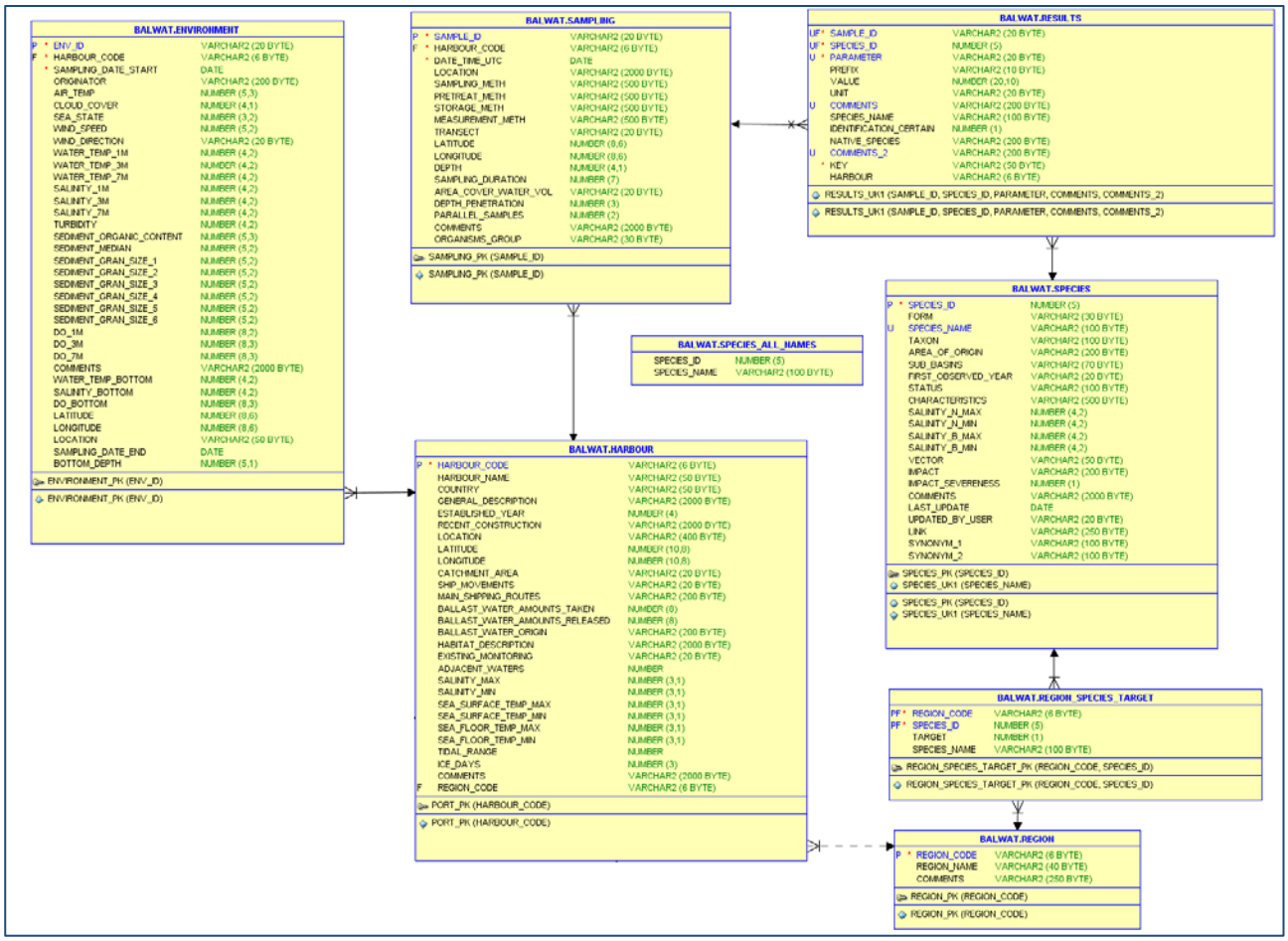

Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
Quality Check
Data for species accumulation curves

3.2.6 Additional Information & Help tab

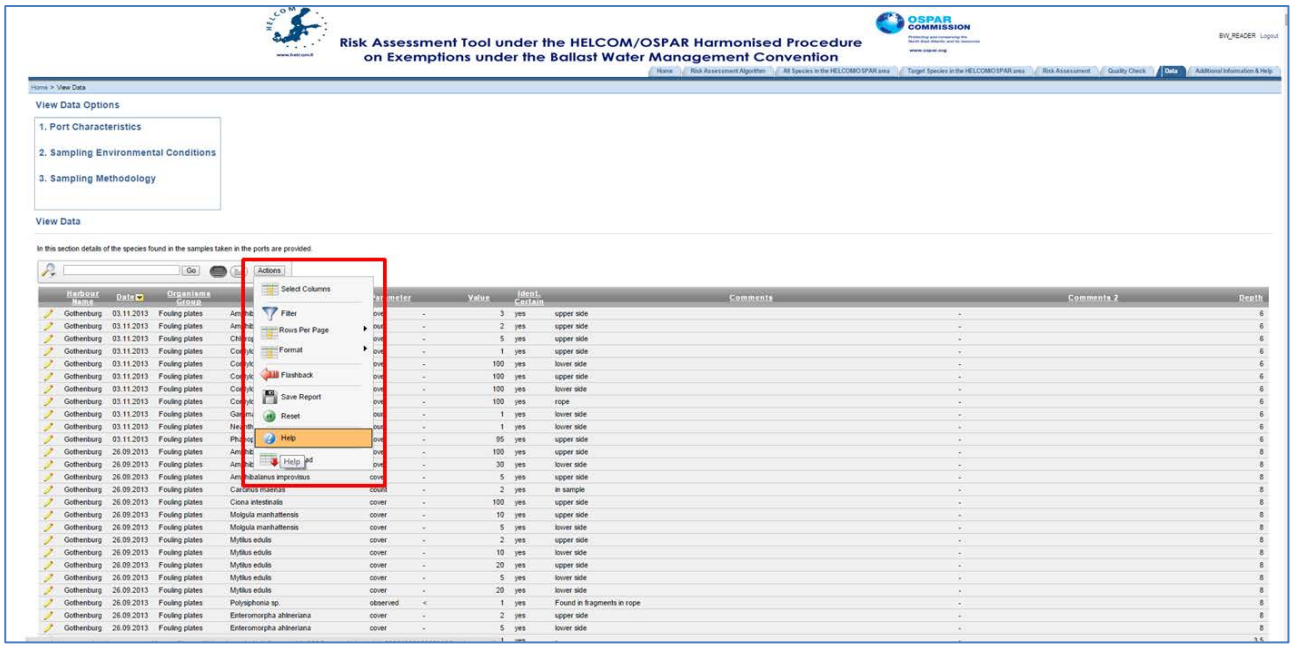
The Additional Information & Help section contains links to the following information (see screen shot below):

- The User Guide to the risk assessment tool, in pdf format;
- The structure of the BALSAM Data Model. See screen shot below;
- The Risk Assessment Algorithm used for assessing the risk;
- The HELCOM/OSPAR Harmonised Procedure on the granting of exemptions under the International Convention for the Control and Management of Ships' Ballast Water and Sediments, Regulation A-4, in pdf format;
- The BWM Convention, in pdf format.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
Options
1. User Guide
2. Data Model
3. HELCOM-OSPAR Guidelines
4. Ballast Water Management Convention

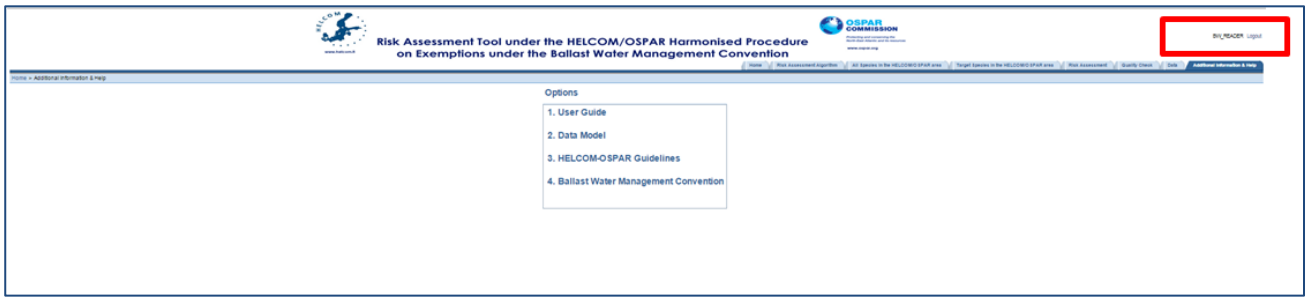


Please be aware that access to the Oracle Help Tool is accessible through the help icon (see screen shoot below):



3.3 Log out

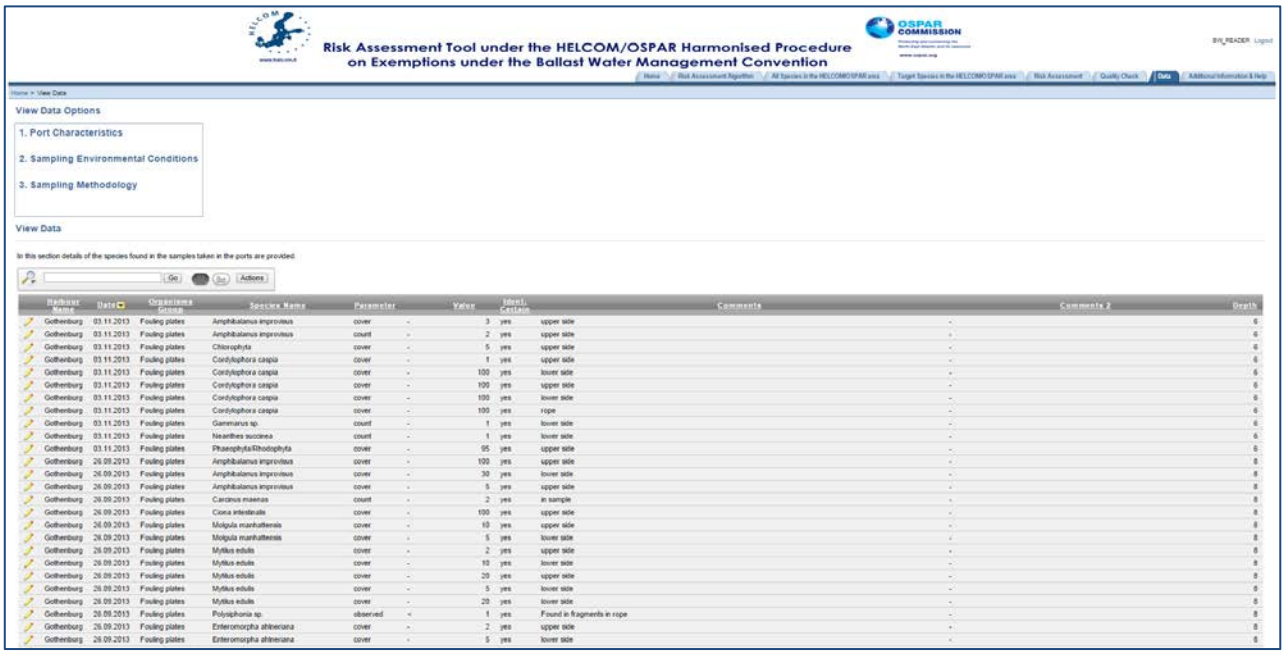
Users can logout of the system by clicking the logout link (right top corner), as shown in the screen shot below.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
Options
1. User Guide
2. Data Model
3. HELCOM-OSPAR Guidelines
4. Ballast Water Management Convention

4. Data Viewing

In this section the way how information is stored in the system is detailed, so it can be easily visualized by the user. The Data tab is to be accessed for that purpose, where access to different types of data is available (see screen shot below):

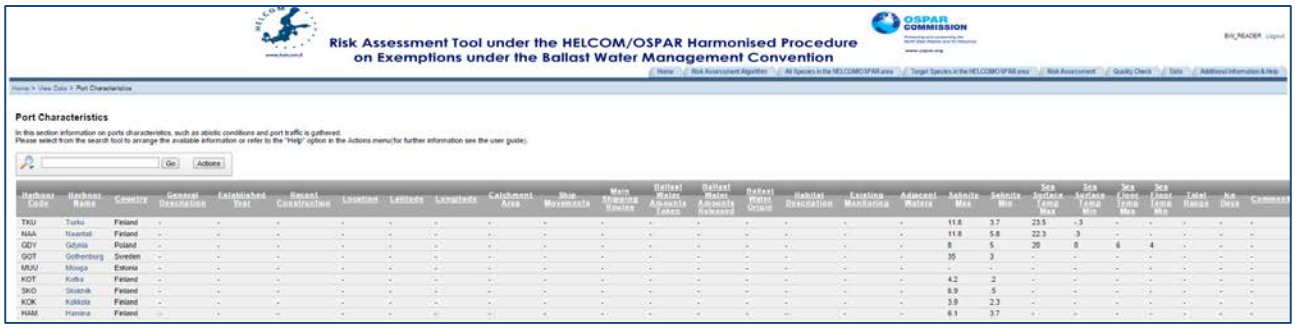
- port characteristics;
- sampling environmental conditions;
- sampling methodology; and
- species recorded in the port surveys.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
View Data Options
1. Port Characteristics
2. Sampling Environmental Conditions
3. Sampling Methodology
View Data

4.1 Port Characteristics

This section contains information gathered on ports characteristics, such as abiotic conditions and port traffic.

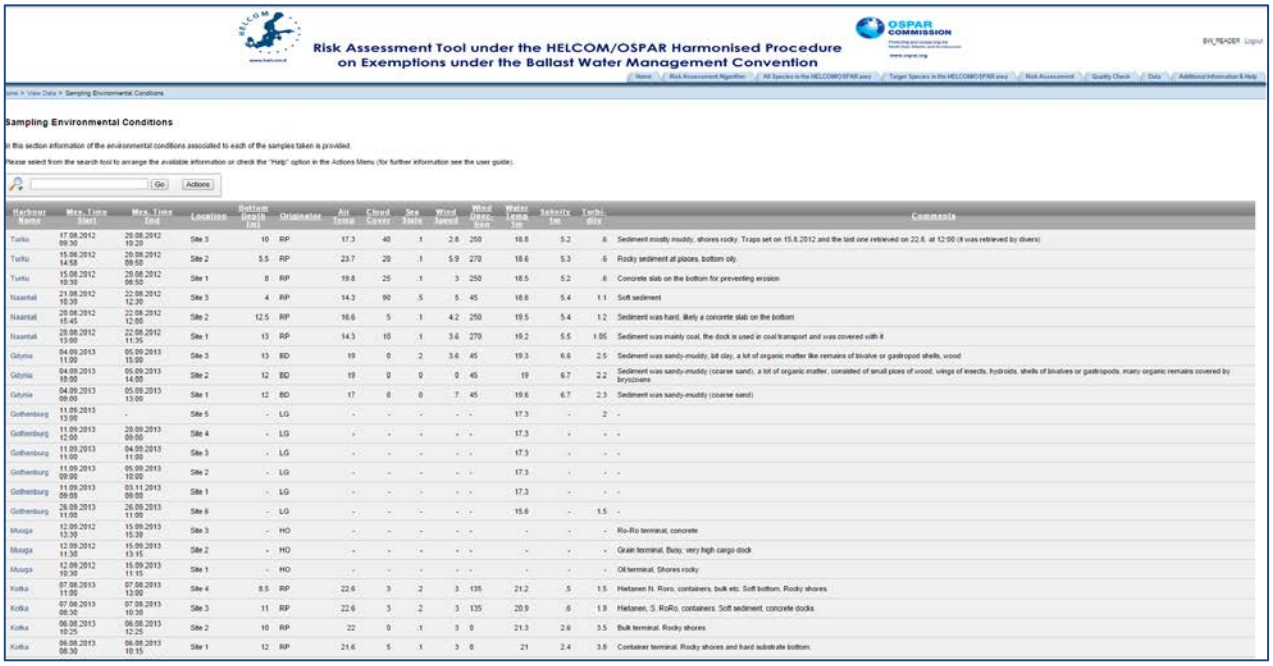
Users can search and view the desired data using the Search and Filter options. See screen shot below. Filters can be set at multiple levels. Please see section 4.5 with different examples to understand how to use the different options.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
OSPAR COMMISSION
Port Characteristics

4.2 Sampling Environment Conditions

This section provides information of the environmental conditions associated to each of the samples taken during the port surveys.

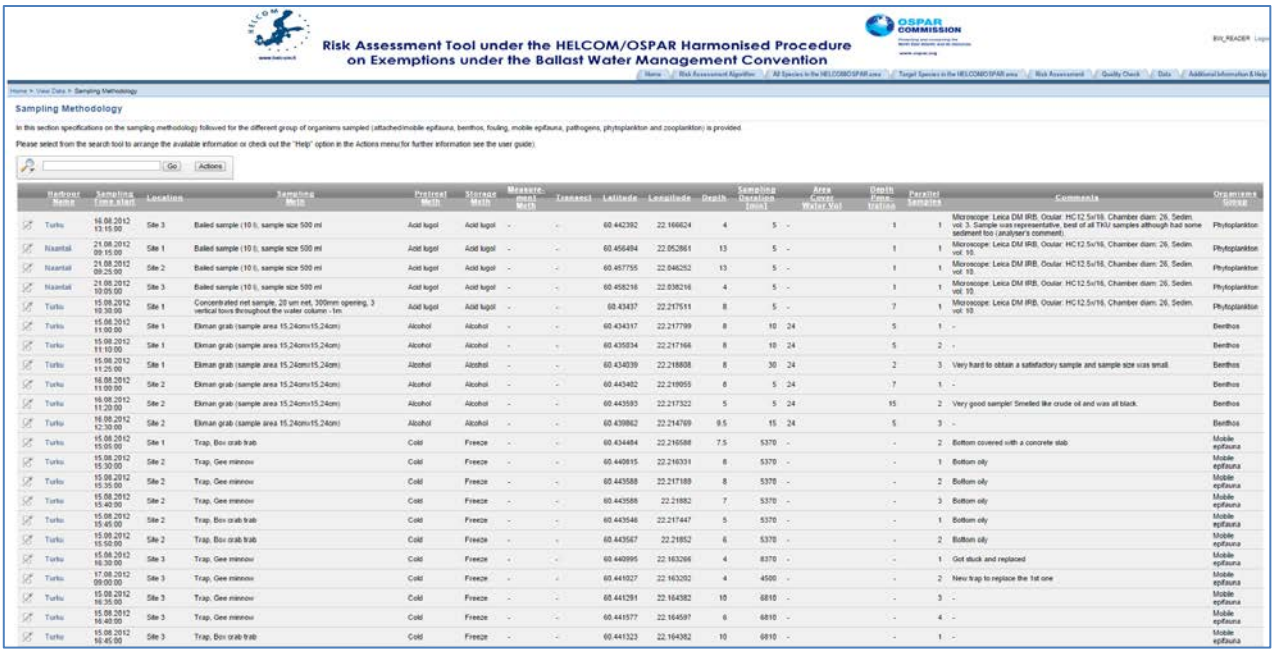
Users can search and view the desired data using the Search and Filter options. See screen shot below. Filters can be set at multiple levels. Please see section 4.5 with different examples to understand how to use the different options.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
OSPAR COMMISSION
Sampling Environmental Conditions

4.3 Sampling Methodology

In this section specifications on the sampling methodology followed for the different group of organisms sampled is provided. The groups of organisms to be sampled are: mobile epifauna, benthos, fouling, pathogens, phytoplankton and zooplankton. Then, a distinction is made between fouling species found in the fouling plates versus those found when materials are scrapped. The same applies to phytoplankton, where a distinction is made between the phytoplankton species found in water sampled pooled versus those found when the sample is taken using a net (see the Port Survey Protocol for further clarification).

Users can search and view the desired data using the Search and Filter options. Filters can be set at multiple levels. Please see section 4.5 with different examples to understand how to use the different options.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
OSPAR COMMISSION
Sampling Methodology

4.4 View Data

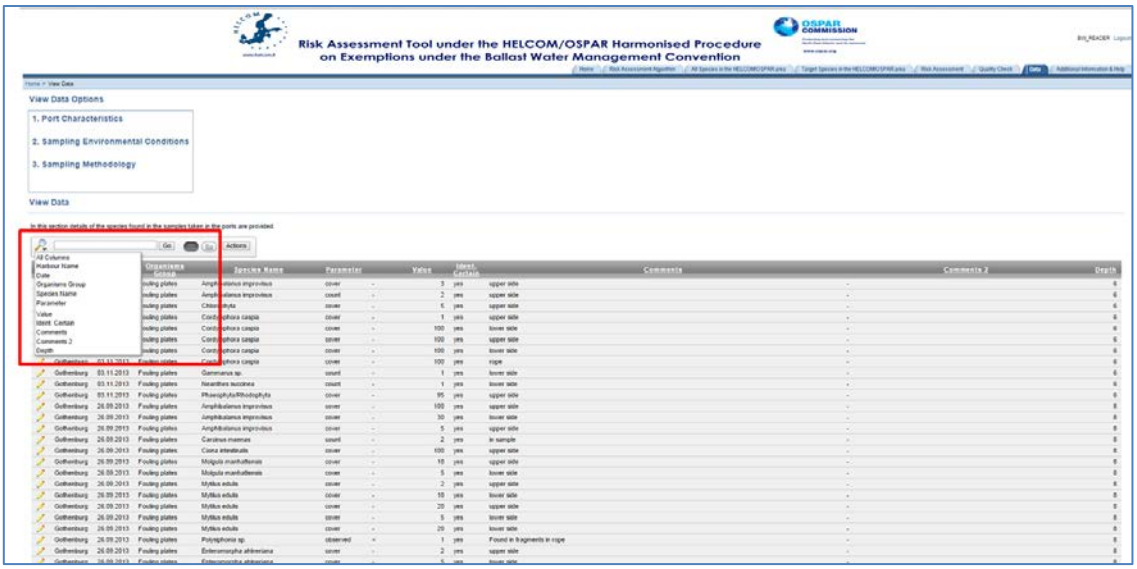
At the bottom of the Data tab, details of the species found in the samples taken during the port surveys are provided.

Users can search and view the desired data using the Search and Filter options. Filters can be set at multiple levels. Please see section 4.5 with different examples to understand how to use the different options.

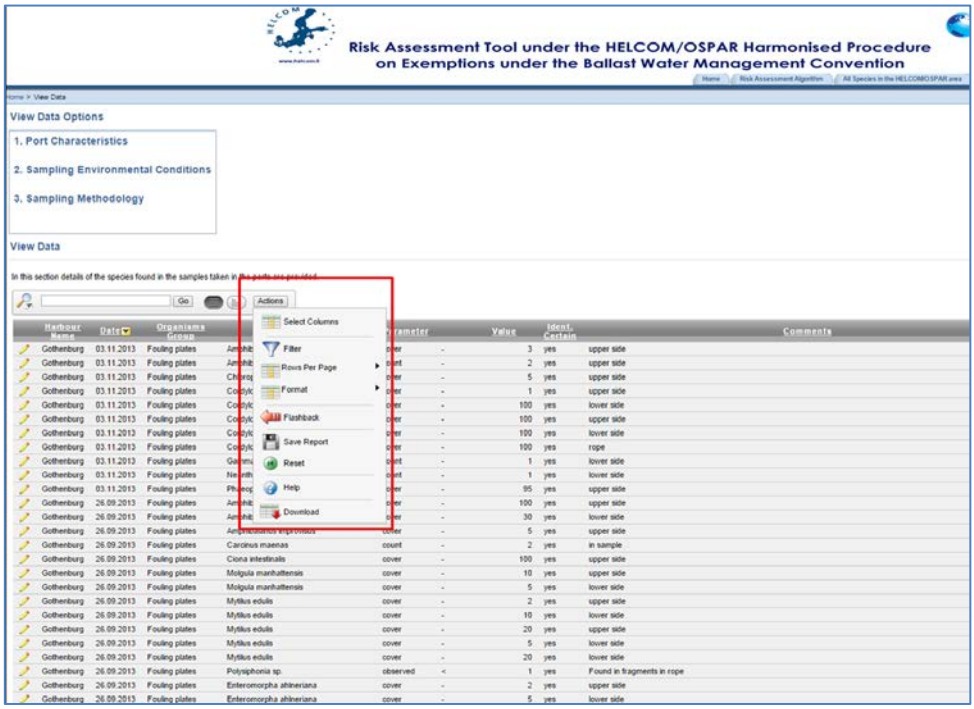
4.5 Using the Searching option

The search bar available at the upper part of those tabs where information is provided enables the user (see screen shot below):

- to identify which column/criteria to search (or all; Search icon);
- to enter case insensitive search criteria (wild card characters are implied, Test box);
- to execute the search (Go button);
- to display alternate default and saved private or public reports (View Report button);
- to customize a report (View Chart button).


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
View Data Options
1. Port Characteristics
2. Sampling Environmental Conditions
3. Sampling Methodology
View Data

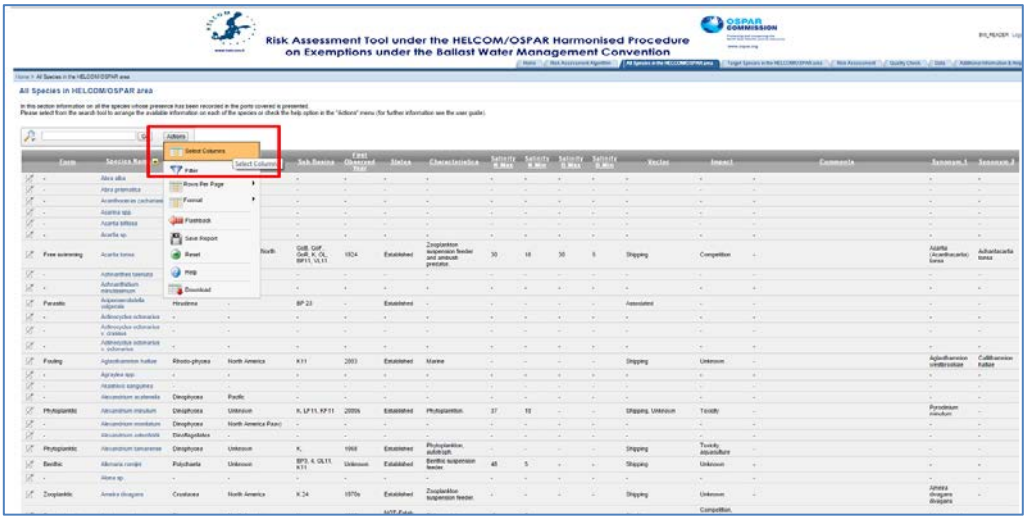
The system enables to perform a set of possible Actions. These can be performed either to the whole set of data or to a search criteria applied. See screen shot below and the subsequent sections in the guide where they are further detailed.



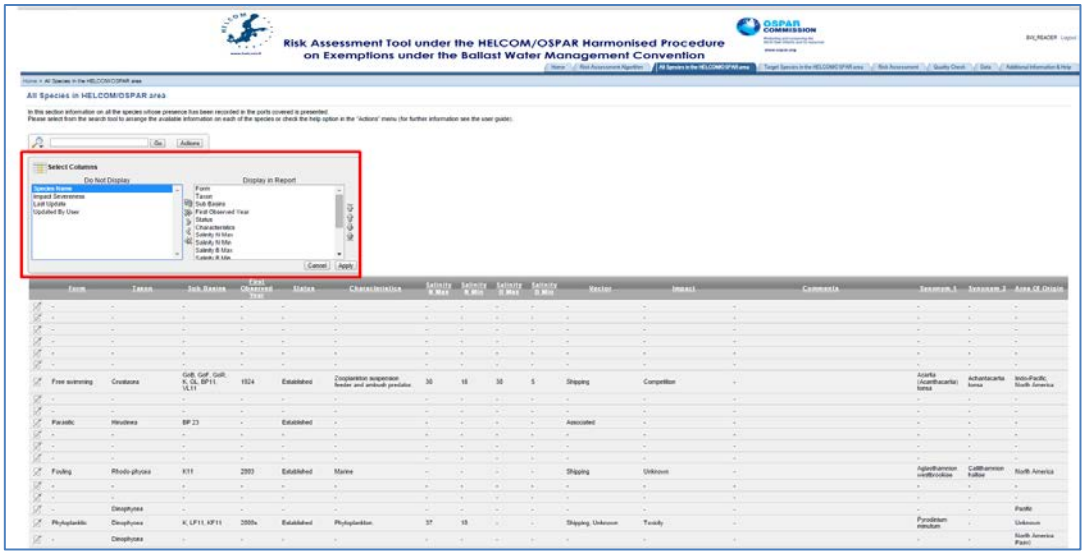
4.6 Adding and Removing Fields of choice for viewing

Users can choose the desired fields (columns) to be displayed in the report. This can be done as follows:

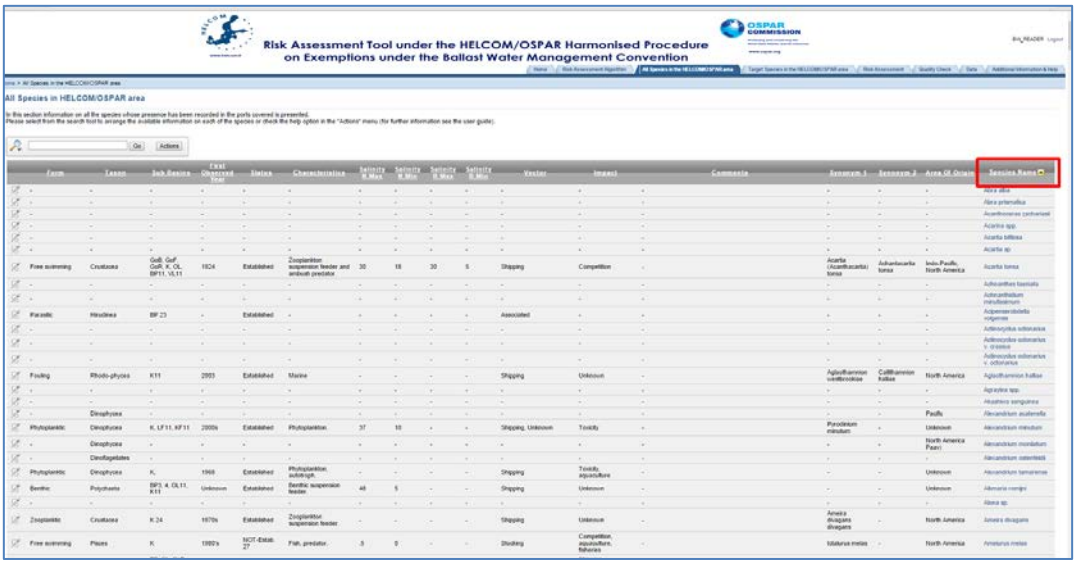
1. In the desired data tab (for e.g. in this case All Species in the HELCOM/OSPAR area tab) click on Actions->Select Columns, as shown in the screen shot:



2. Select the desired columns that you want to display by using the > (Move) symbol as shown in the screen shot and click Apply:



3. New Report with chosen additional column appears:

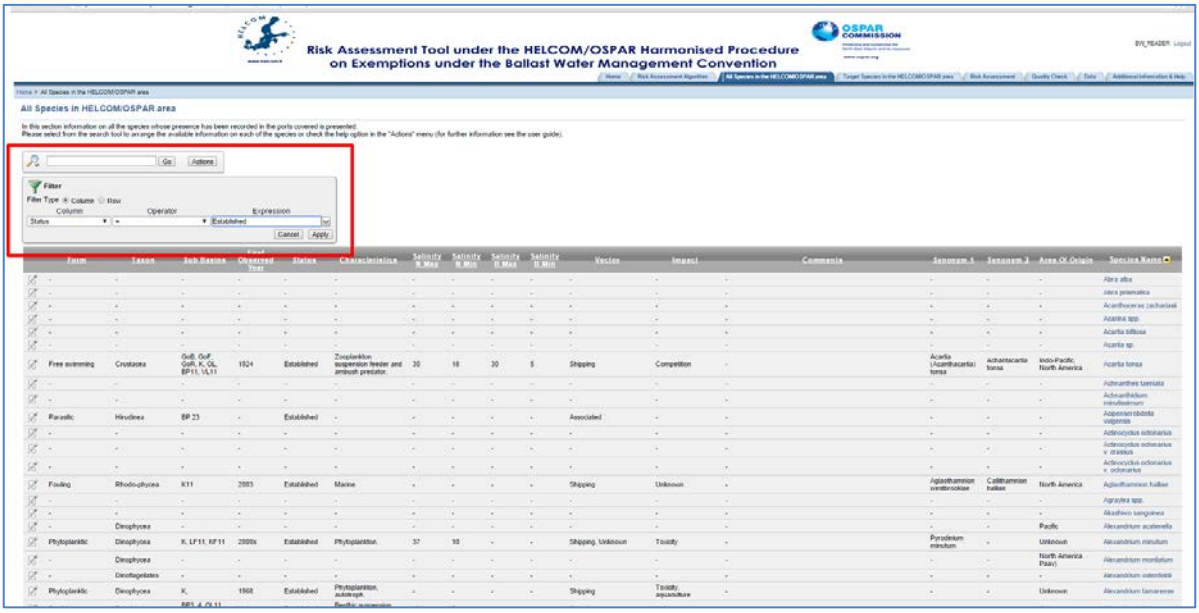

Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
All Species in HELCOM/OSPAR area

Inversely, users can also remove the desired fields (columns) in the report by clicking the <(Remove) option and then clicking the Apply button.

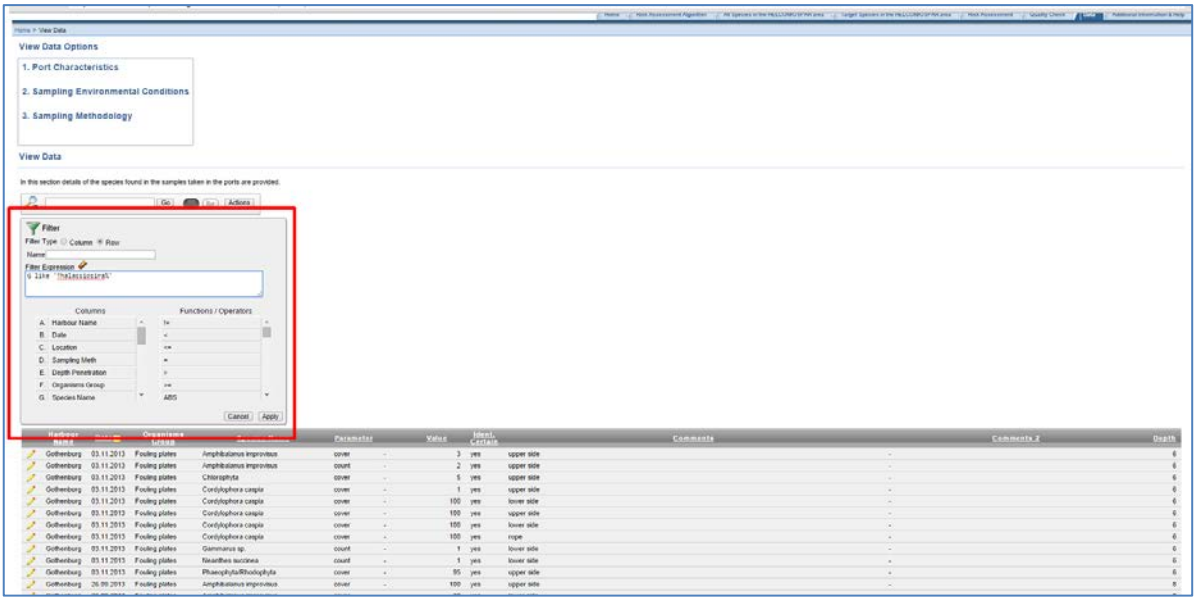
4.7 Using the Filter option

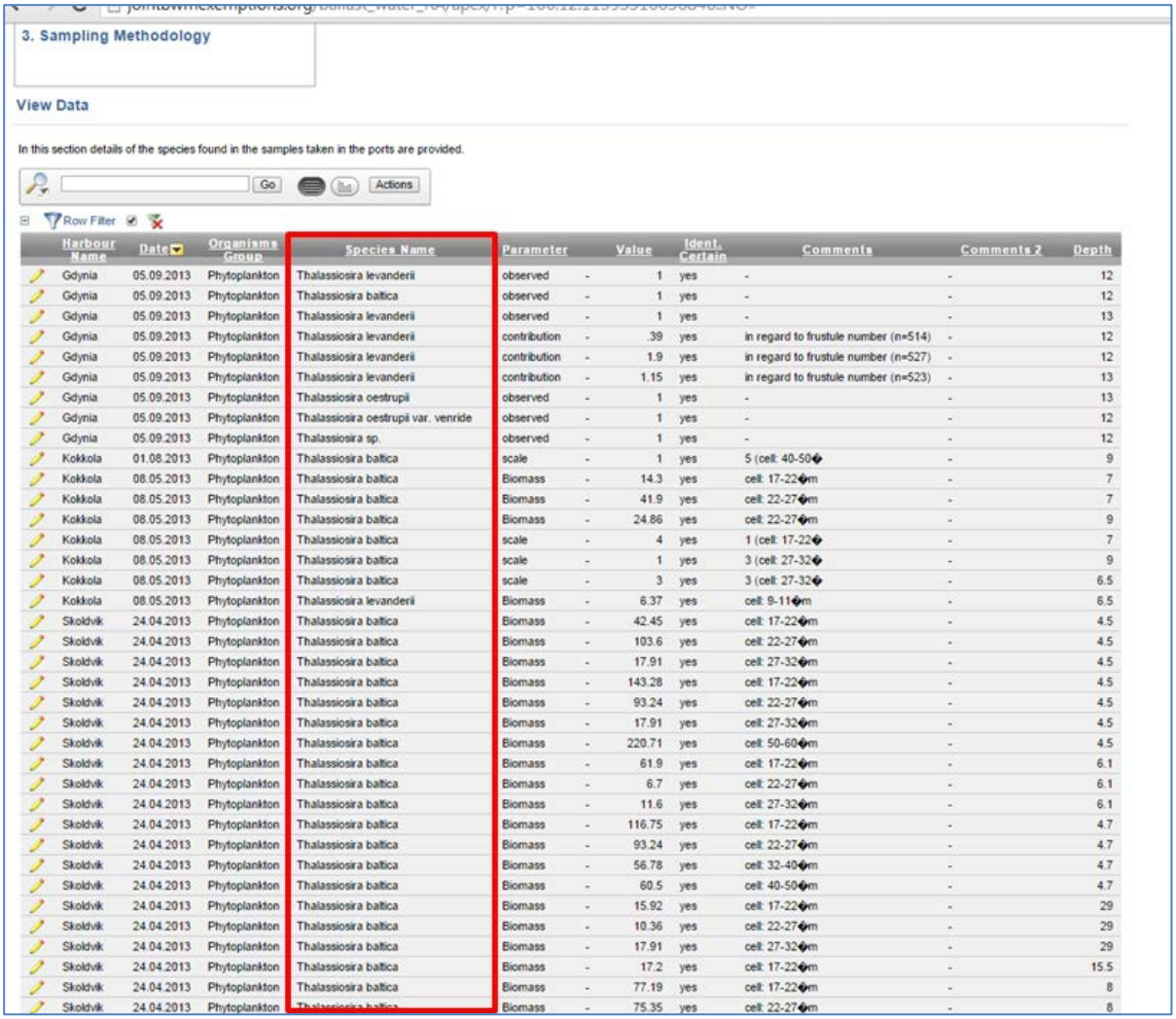
Users can apply filters either by column/criteria or by row/register:

a) If filtering by column: select a column (it does not need to be one that is displayed), select a standard Oracle operator (=, !=, not in, between), and enter an expression to compare against. Expressions are case sensitive. Use % as a wild card (for example, SPECIES _NAME like A%). In the example shown in the screen shot, the species which are established in the HELCOM/OSPAR area are shown.



b) If filtering by row: complex clauses can be created using column aliases and any Oracle functions or operators (for example, G = 'VA' or G = 'CT', where G is the alias for SPECIES _NAME). In the example shown in the screens shots, the different individuals of the gender Thalassiosira found in the ports sampled in the HELCOM/OSPAR area are shown.



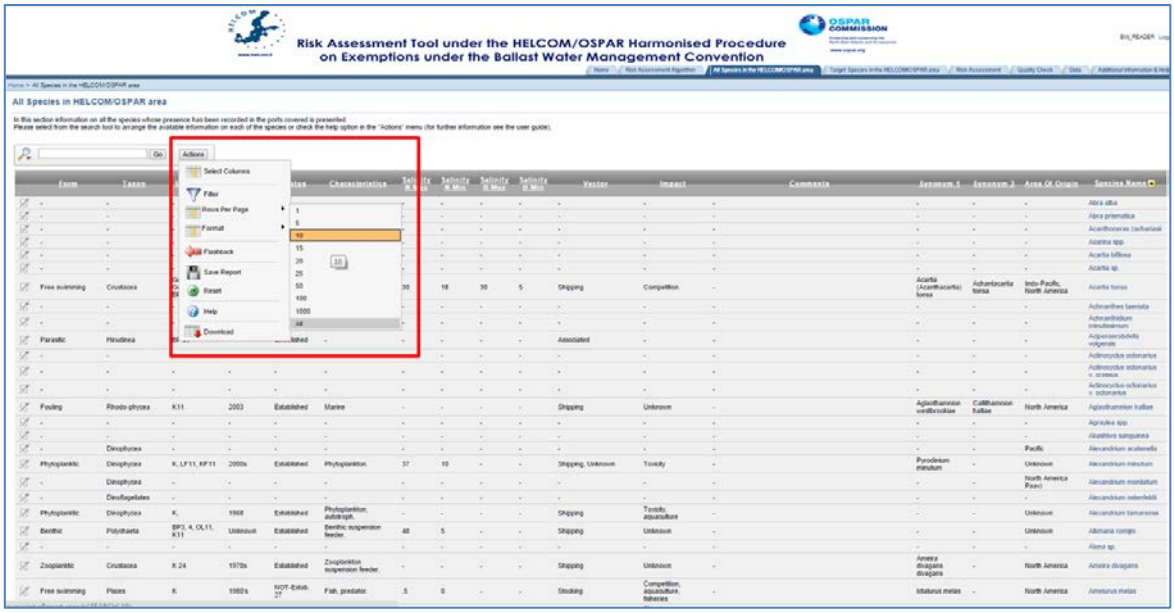

3. Sampling Methodology
View Data
In this section details of the species found in the samples taken in the ports are provided.
Go
Actions
Row Filter

Harbour Name	Date	Organisms Group	Species Name	Parameter		Value	Ident. Certain	Comments	Comments 2	Depth
Gdynia	05.09.2013	Phytoplankton	Thalassiosira levanderii	observed	-	1	yes	-	-	12
Gdynia	05.09.2013	Phytoplankton	Thalassiosira baltica	observed	-	1	yes	-	-	12
Gdynia	05.09.2013	Phytoplankton	Thalassiosira levanderii	observed	-	1	yes	-	-	13
Gdynia	05.09.2013	Phytoplankton	Thalassiosira levanderii	contribution	-	.39	yes	in regard to frustule number (n=514)	-	12
Gdynia	05.09.2013	Phytoplankton	Thalassiosira levanderii	contribution	-	1.9	yes	in regard to frustule number (n=527)	-	12
Gdynia	05.09.2013	Phytoplankton	Thalassiosira levanderii	contribution	-	1.15	yes	in regard to frustule number (n=523)	-	13
Gdynia	05.09.2013	Phytoplankton	Thalassiosira oestrupii	observed	-	1	yes	-	-	13
Gdynia	05.09.2013	Phytoplankton	Thalassiosira oestrupii var. venride	observed	-	1	yes	-	-	12
Gdynia	05.09.2013	Phytoplankton	Thalassiosira sp.	observed	-	1	yes	-	-	12
Kokkola	01.08.2013	Phytoplankton	Thalassiosira baltica	scale	-	1	yes	5 (cell: 40-50	-	9
Kokkola	08.05.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	14.3	yes	cell: 17-22 m	-	7
Kokkola	08.05.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	41.9	yes	cell: 22-27 m	-	7
Kokkola	08.05.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	24.86	yes	cell: 22-27 m	-	9
Kokkola	08.05.2013	Phytoplankton	Thalassiosira baltica	scale	-	4	yes	1 (cell: 17-22	-	7
Kokkola	08.05.2013	Phytoplankton	Thalassiosira baltica	scale	-	1	yes	3 (cell: 27-32	-	9
Kokkola	08.05.2013	Phytoplankton	Thalassiosira baltica	scale	-	3	yes	3 (cell: 27-32	-	6.5
Kokkola	08.05.2013	Phytoplankton	Thalassiosira levanderii	Biomass	-	6.37	yes	cell: 9-11 m	-	6.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	42.45	yes	cell: 17-22 m	-	4.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	103.6	yes	cell: 22-27 m	-	4.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	17.91	yes	cell: 27-32 m	-	4.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	143.28	yes	cell: 17-22 m	-	4.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	93.24	yes	cell: 22-27 m	-	4.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	17.91	yes	cell: 27-32 m	-	4.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	220.71	yes	cell: 50-60 m	-	4.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	61.9	yes	cell: 17-22 m	-	6.1
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	6.7	yes	cell: 22-27 m	-	6.1
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	11.6	yes	cell: 27-32 m	-	6.1
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	116.75	yes	cell: 17-22 m	-	4.7
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	93.24	yes	cell: 22-27 m	-	4.7
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	56.78	yes	cell: 32-40 m	-	4.7
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	60.5	yes	cell: 40-50 m	-	4.7
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	15.92	yes	cell: 17-22 m	-	29
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	10.36	yes	cell: 22-27 m	-	29
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	17.91	yes	cell: 27-32 m	-	29
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	17.2	yes	cell: 17-22 m	-	15.5
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	77.19	yes	cell: 17-22 m	-	8
Skoldvik	24.04.2013	Phytoplankton	Thalassiosira baltica	Biomass	-	75.35	yes	cell: 22-27 m	-	8

4.8 Selecting the number of records per page in a report

Users can set the number of records to be viewed in each page of a report. Users can then navigate to the remaining records (next pages) by clicking the > (Next) at the bottom of the page (see screen shot below).

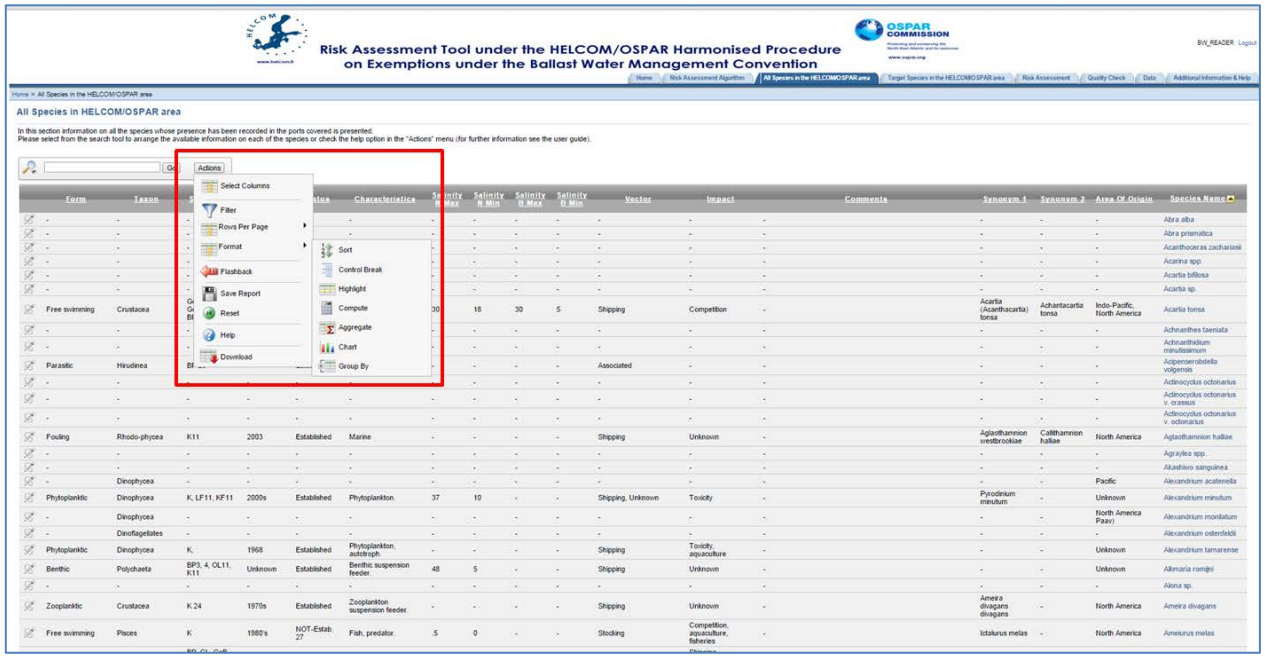
1. Click on the Actions button. Click on Rows per page and choose the desired number of rows that you want to see per page:



2. The report is displayed with the chosen number of records per page (10 in the example provided).

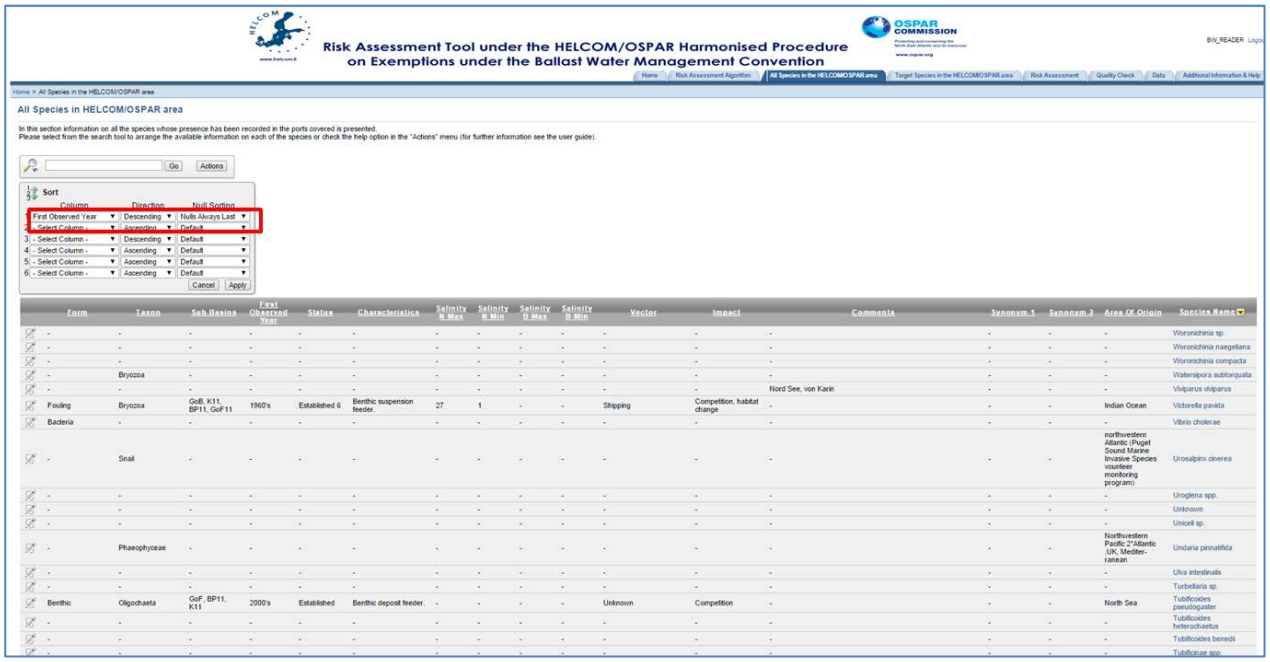
4.9 Format of the displayed report

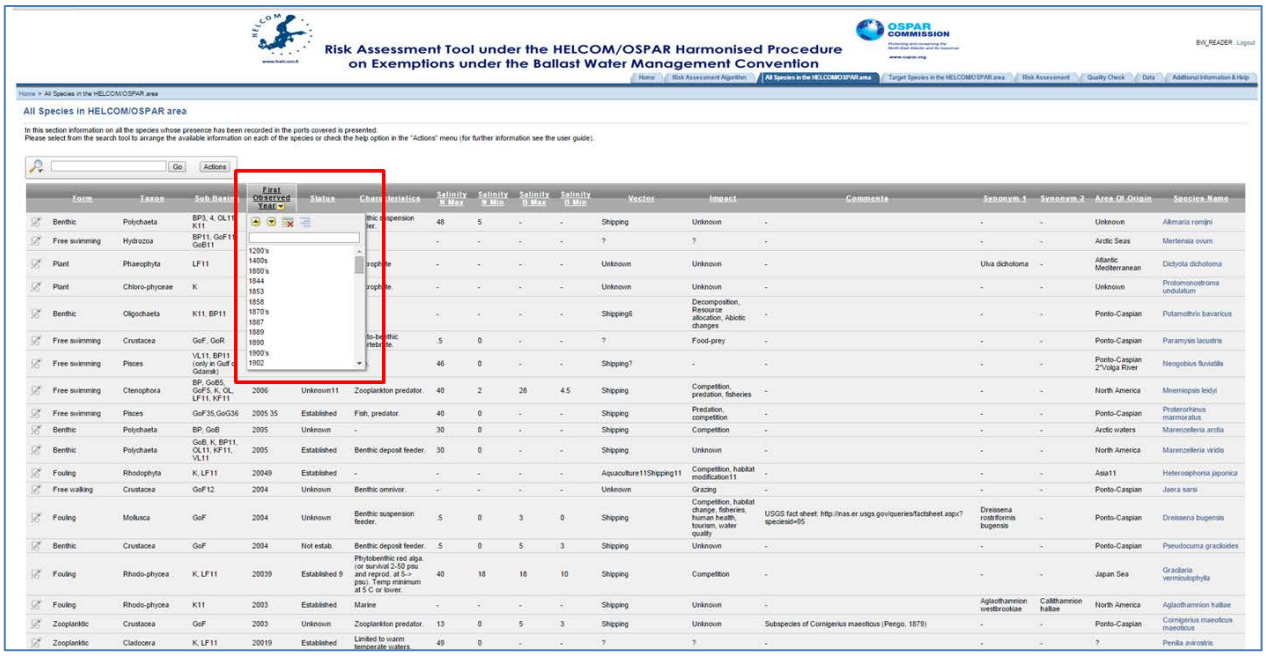
Users can customize the display of reports. There are a set of different options available (see the screen shoot):



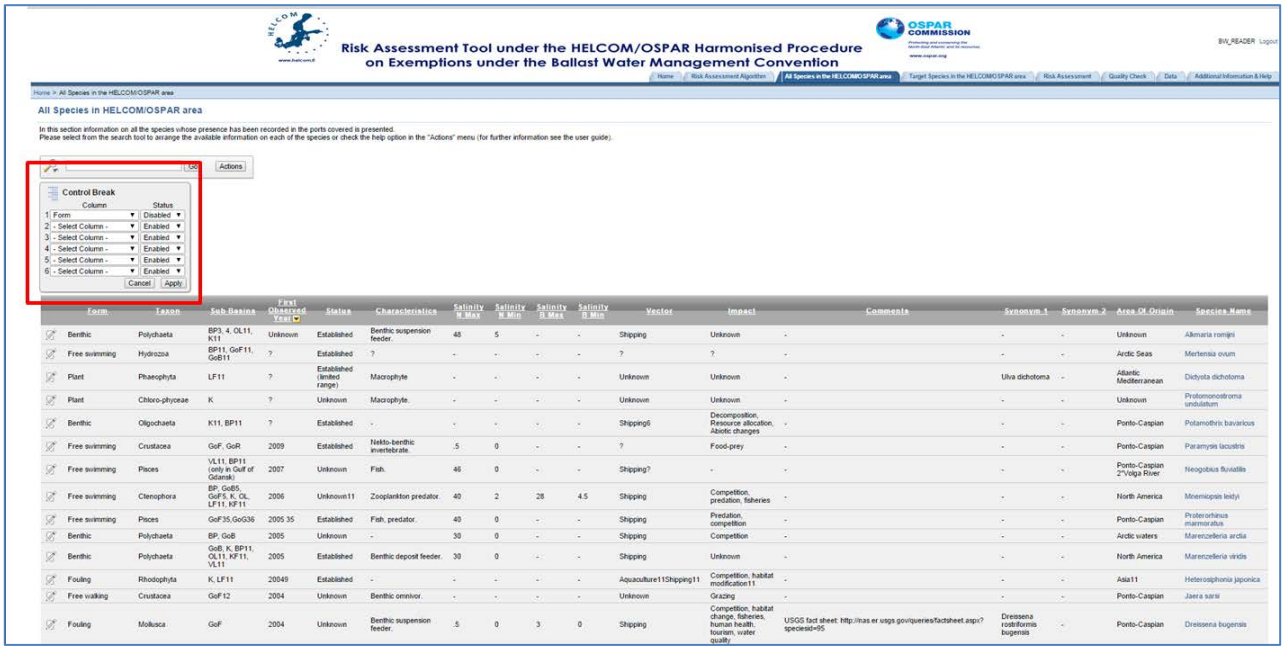
Click on the Actions button. Click on Format and choose from the list:

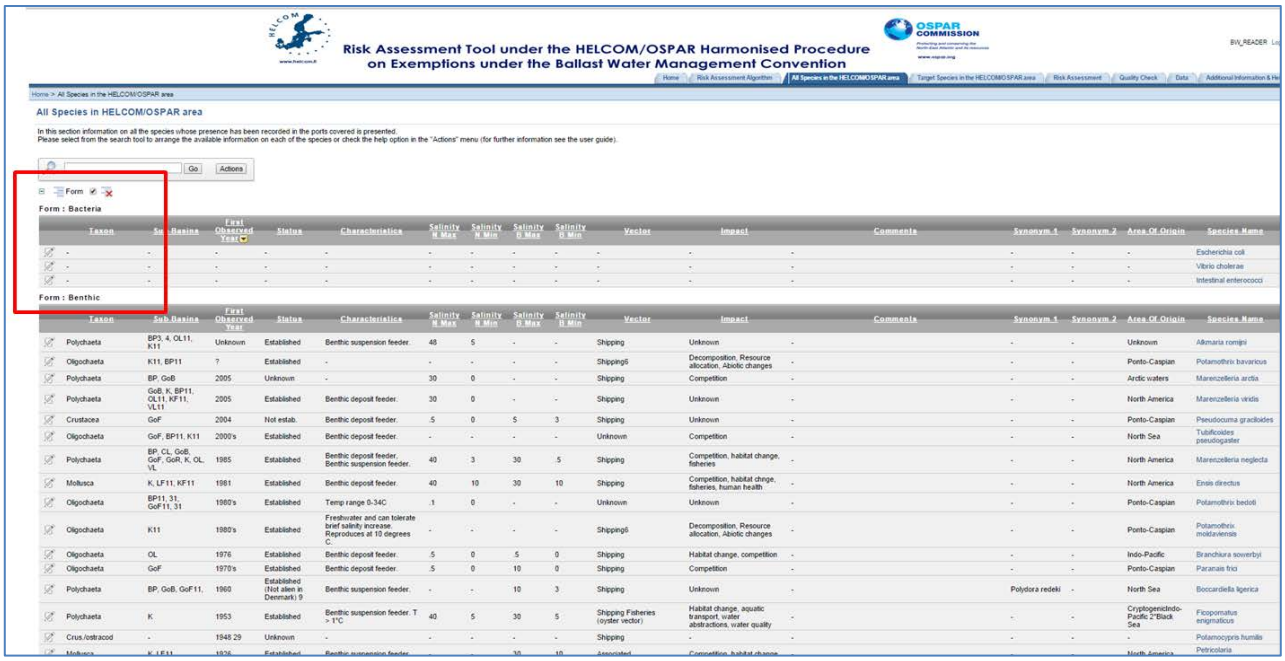
1. Sort: used to change the columns/criteria to organize the registers and to choose to do it in ascending or descending order. How to handle nulls values can also be specified; they are displayed last or first by default. In the example provided, data as contained in the First Observed Year column have been organized in descending order (see screen shoots):




Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
All Species in HELCOM/OSPAR area

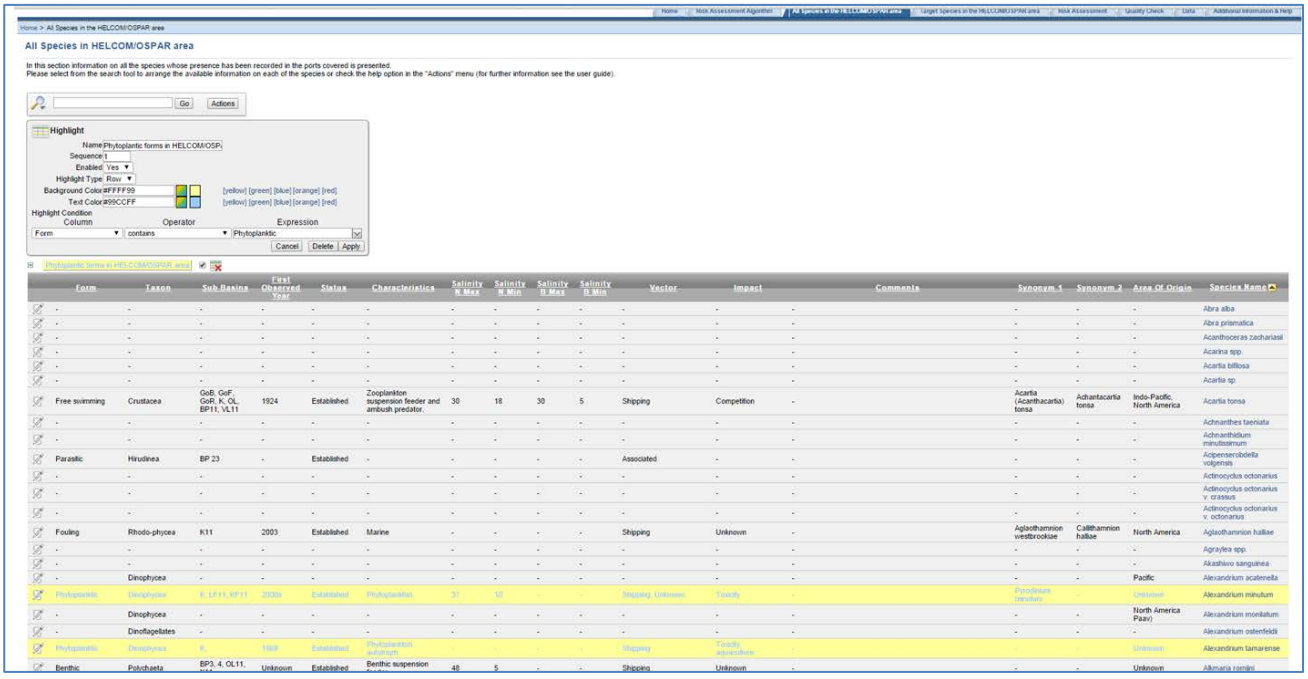
2. Control break: this format option enables to create a break group on one or several columns/criteria. Thus, columns are pulled out of the report, and displayed as a master record. In the example (see screen shoots), all registers belonging to the different Forms in the system (bacteria, benthic, and so on) are shown separately using this format option.


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
All Species in HELCOM/OSPAR area
Control Break


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
All Species in HELCOM/OSPAR area
Form : Bacteria
Form : Benthic

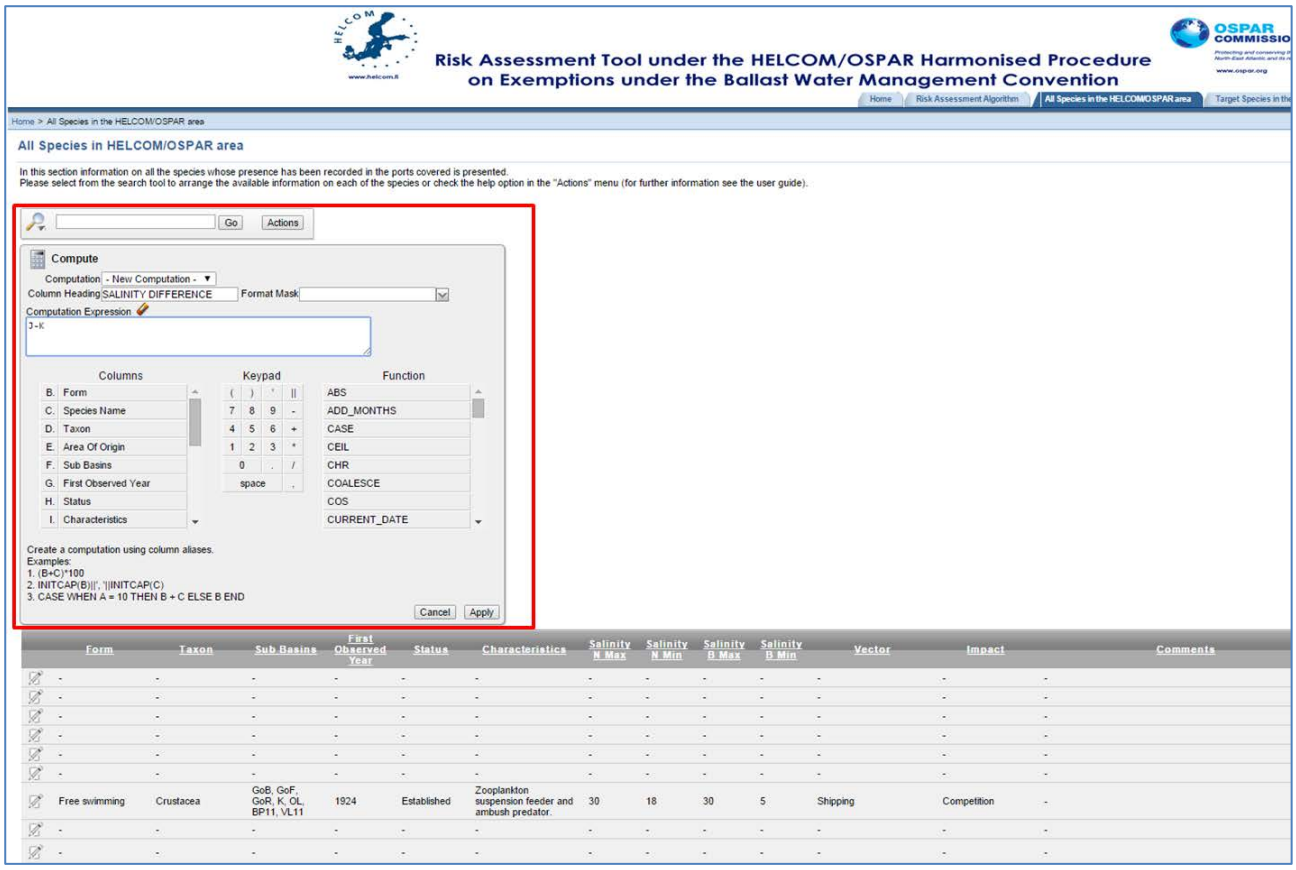
3. Highlight: it enables user to define a filter. Rows meeting the filter criteria are displayed as highlighted according to the characteristics associated with the filter, which are:
    - Name: of the filter displayed;
    - Sequence: in which the rules are evaluated;
    - Enabled: or disabled go a rule;
    - Highlight type: identifies whether the row or cell should be highlighted. If Cell is selected, the column referenced in the Highlight Condition is highlighted;
    - Background Color: of the highlighted area;
    - Text Color: for the text in the highlighted area;
    - Highlight Condition: to define the filter condition.

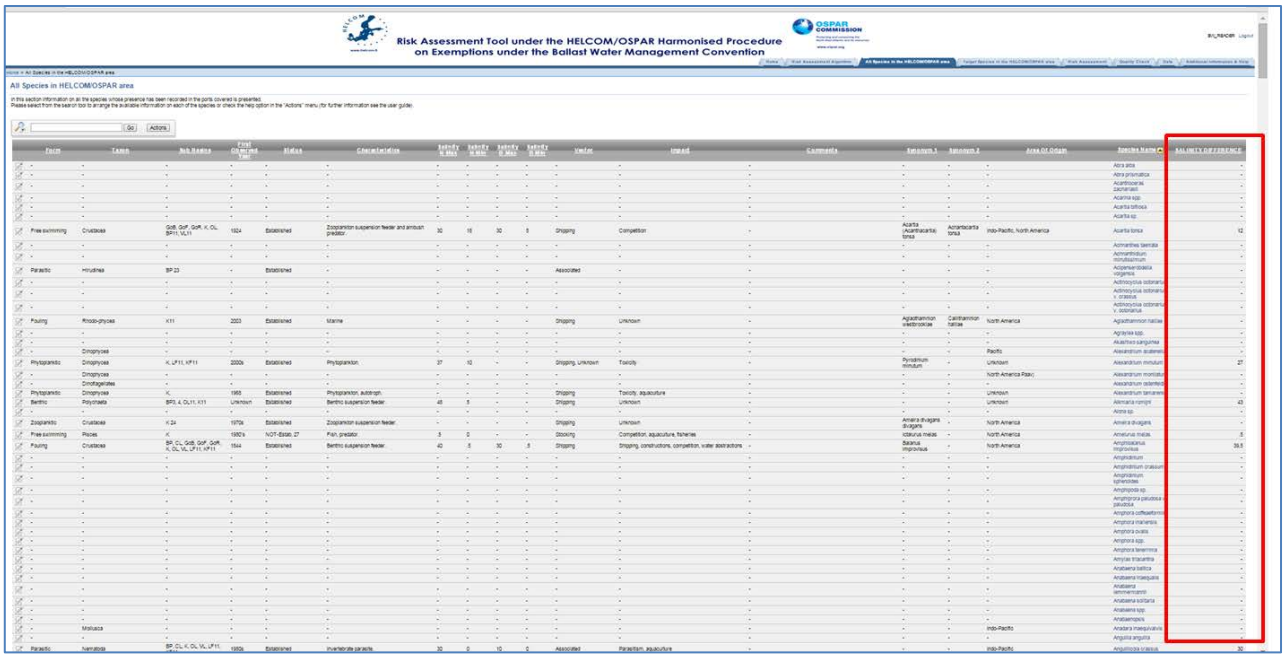
    In the example (see screen shot) those phytoplankton species in the HELCOM/OSPAR area are highlighted in yellow (rows).



4. Compute: this format option enables users to add computed columns to the report displayed. These can be mathematical computations (for example, NBR_HOURS/24) or standard Oracle functions applied to existing columns. Options include:
    - Computation: it enables to select a previously defined computation to edit;
    - Column Heading: of the new column;
    - Format Mask: it is an Oracle format mask to be applied against the column (for example, S9999);
    - Computation expression: it is the computation to be performed. Within the computation, columns are referenced using the aliases displayed;

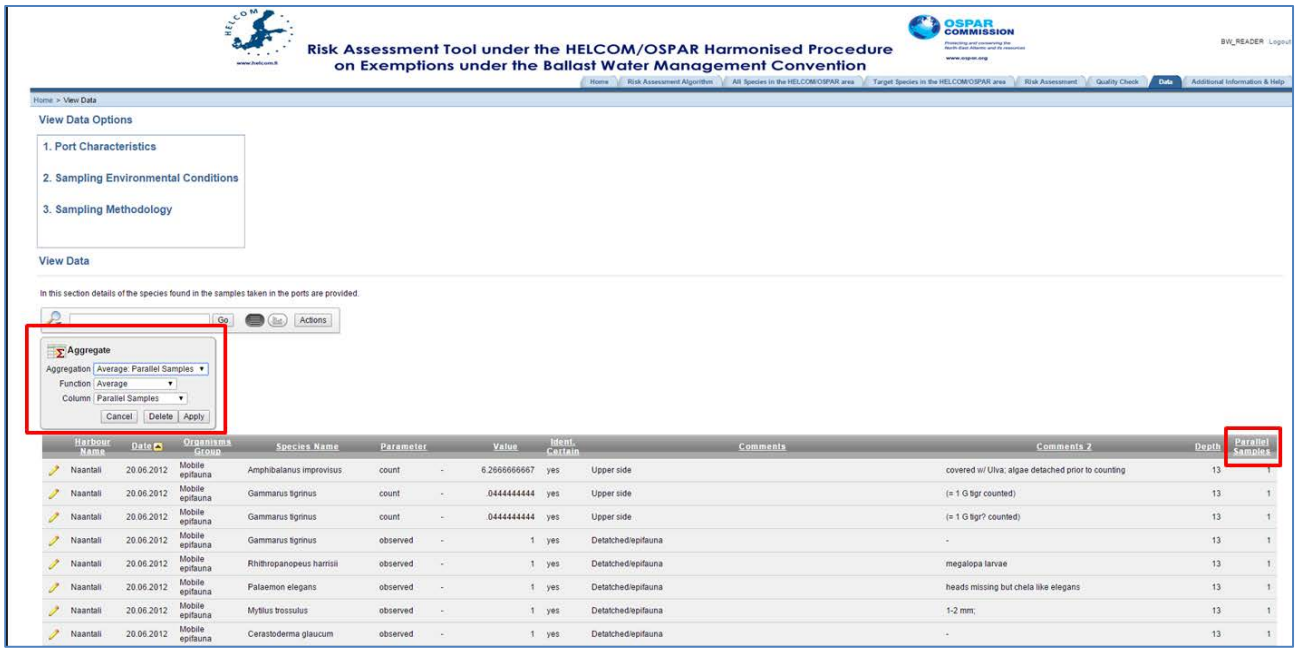
    Below Computation expression, under Columns epigraph, columns in the query are displayed together with their associated alias. By clicking on the column name or alias, a column is included in the Computation expression. There is a Keypad next to Columns, which functions as a shortcut to commonly used keys. And next to Columns, there is a list of Functions to be chosen.
    In the example, see screen shots, a new column showing the difference of native maximum and minimum salinity is created.

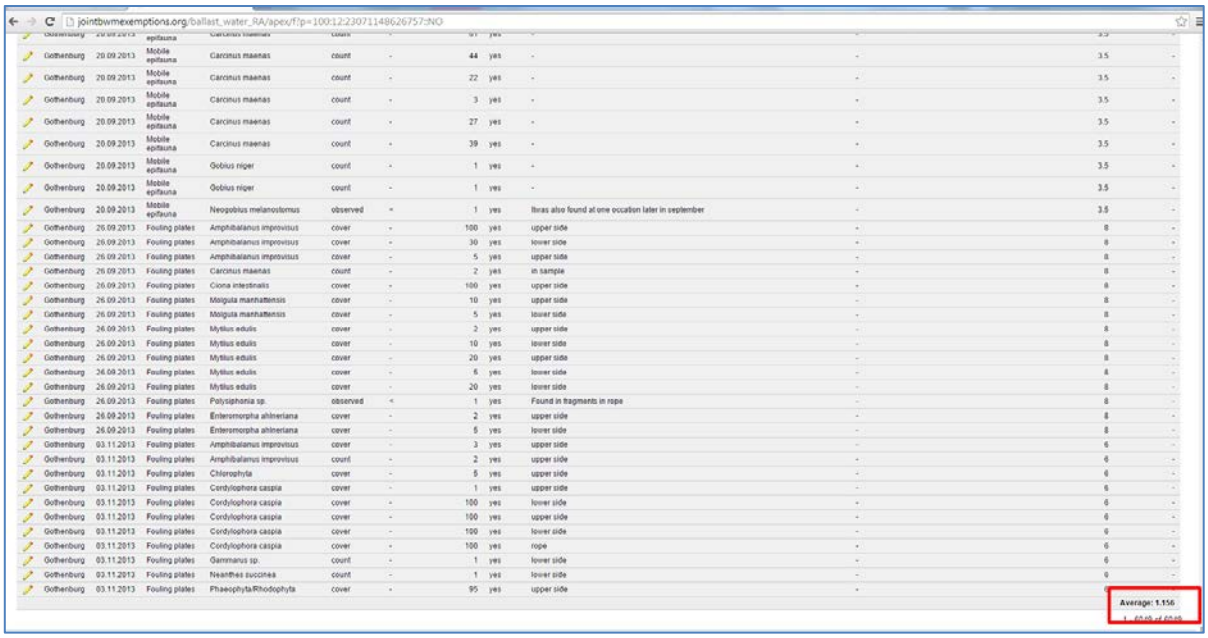



Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
All Species in HELCOM/OSPAR area

5. Aggregate: this option enables to perform mathematical computations against a column. Aggregates display after each control break and at the end of the report within the column they are defined. Options include:
    - Aggregation: it enables the selection of a previously defined aggregation to edit.
    - Function: to be performed (for example, SUM, MIN).
    - Column: it is used to select the column to apply the mathematical function to. Only numeric columns are displayed.

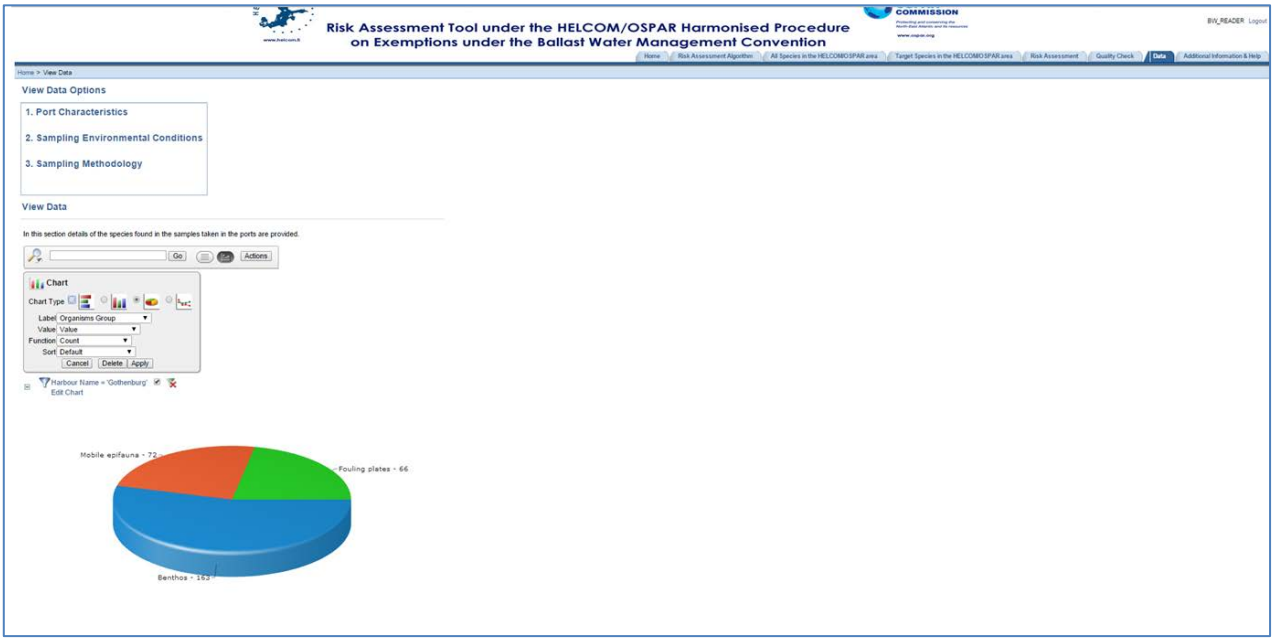
    In the example, see screen shots, a new value showing the average number of parallel samples taken is provided.





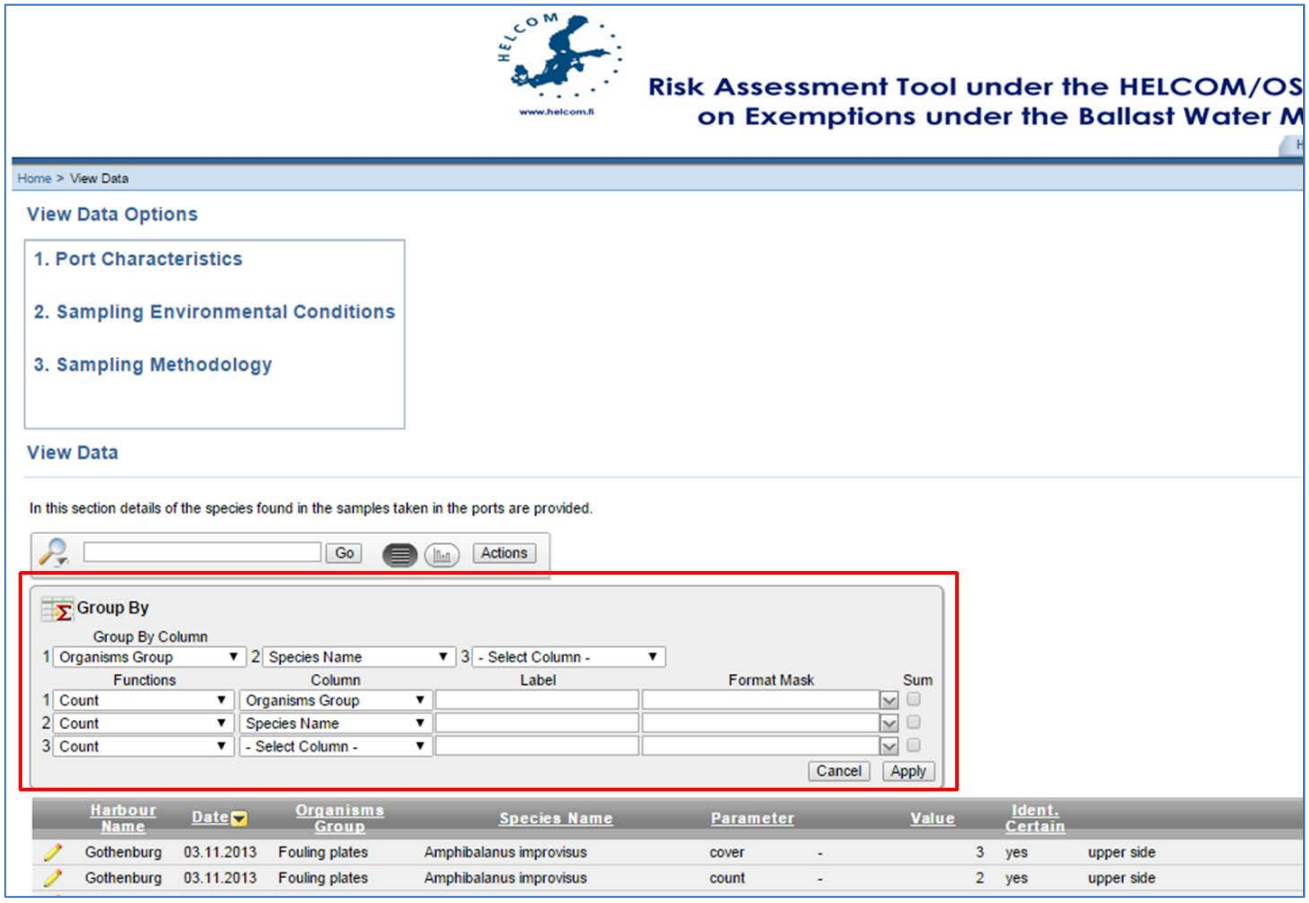
6. Chart: users can define one chart per saved report. Once defined, the links below the Search bar enables to switch between the chart and report views. Options include:
    - Chart Type: to select from horizontal bar, vertical bar, pie or line type of chart;
    - Label: it enables to select the column to be used as label;
    - Axis Title for Label: it is the title displayed on the axis associated to the column selected as Label. This option is not available for pie charts;
    - Value: it enables to select the column to be used as value. If the function is a COUNT, a Value does not need to be selected;
    - Axis Title for Value: it is the title displayed on the axis associated to the column selected as Value. This option is not available for pie charts;
    - Function: it is an optional function to be performed on the column selected as Value;
    - Sort: it allows sorting the result set.

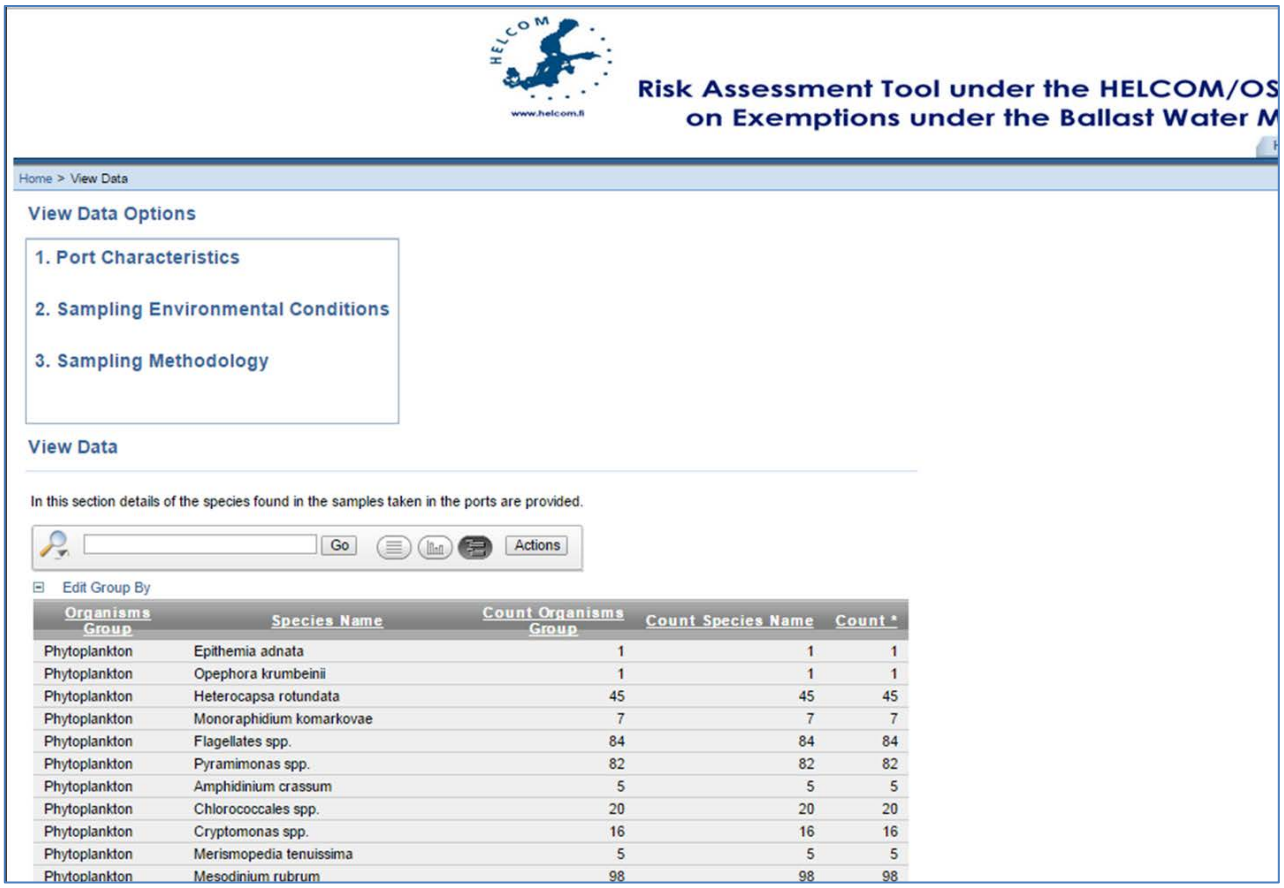
    In the example, see screen shot, a pie chart has been created for the Gothenburg port (filter to be done first to show only data available from that port) showing the number of different type of organisms (mobile epifauna, fouling plates and benthos) found in the port.

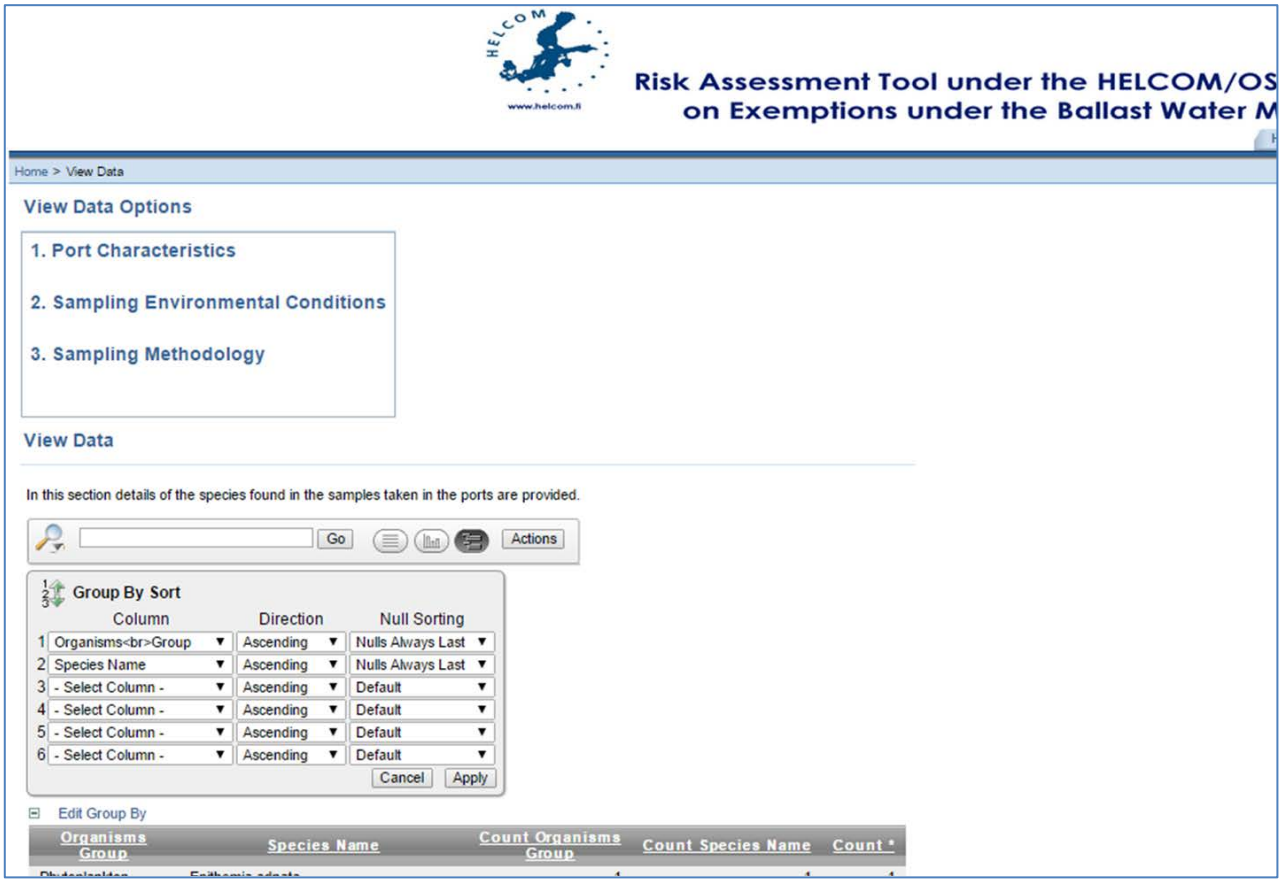


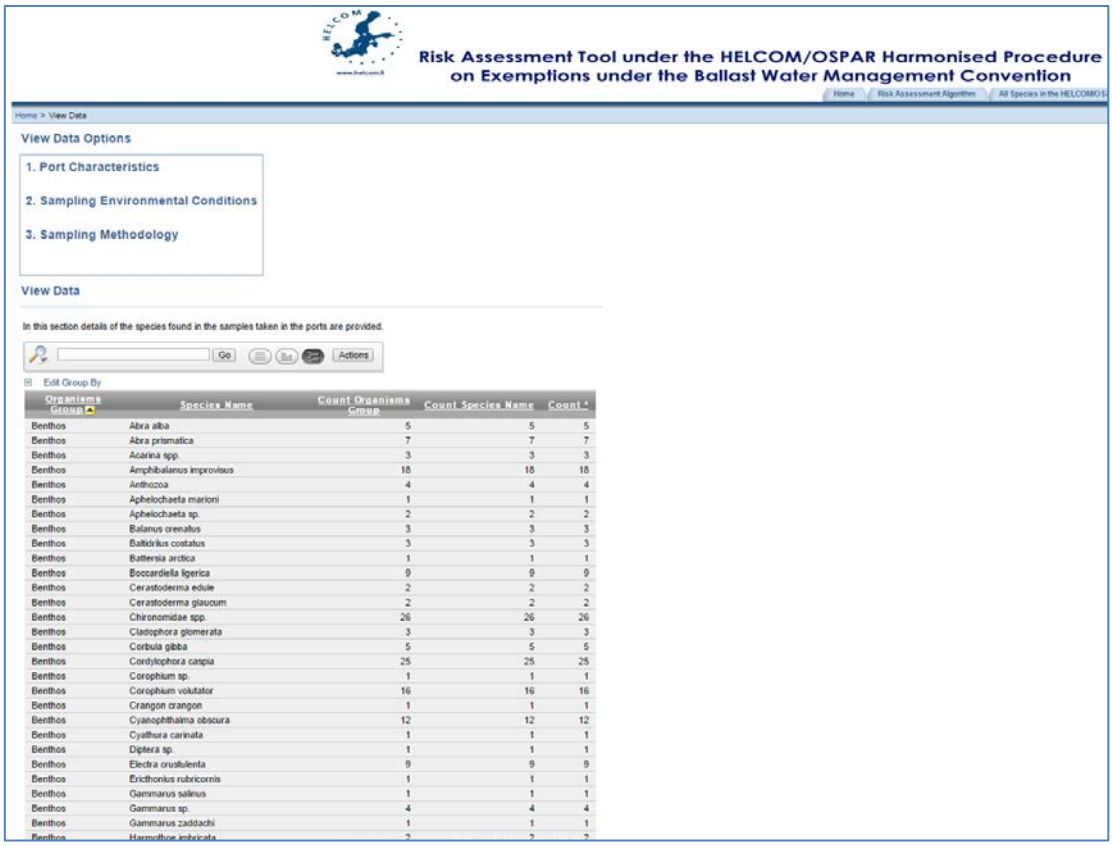
7. Group by: user can define one Group By report per saved report. Subsequently, the links below the Search bar enables the user to switch between the Group By and the Report views. To create a Group By report, select:
    - the columns/criteria on which to group: up to three columns can be selected;
    - the columns/criteria to aggregate along with the function to be performed i.a. average, sum, count;
    - the columns/criteria to use for sorting: up to three columns can be selected along with direction and null sorting options.

   In the example, see screen shots, a Group By report is created on the species found per group of organisms in all ports were data are available. Subsequently data are organized in alphabetical order.




Risk Assessment Tool under the HELCOM/OS
on Exemptions under the Ballast Water M
Home > View Data
View Data Options
1. Port Characteristics
2. Sampling Environmental Conditions
3. Sampling Methodology
View Data
In this section details of the species found in the samples taken in the ports are provided.
Go
Actions
Edit Group By
Organisms Group
Species Name
Count Organisms Group
Count Species Name
Count *
Phytoplankton Epithemia adnata 1 1 1
Phytoplankton Opephora krumbeinii 1 1 1
Phytoplankton Heterocapsa rotundata 45 45 45
Phytoplankton Monoraphidium komarkovae 7 7 7
Phytoplankton Flagellates spp. 84 84 84
Phytoplankton Pyramimonas spp. 82 82 82
Phytoplankton Amphidinium crassum 5 5 5
Phytoplankton Chlorococcales spp. 20 20 20
Phytoplankton Cryptomonas spp. 16 16 16
Phytoplankton Merismopedia tenuissima 5 5 5
Phytoplankton Mesodinium rubrum 98 98 98

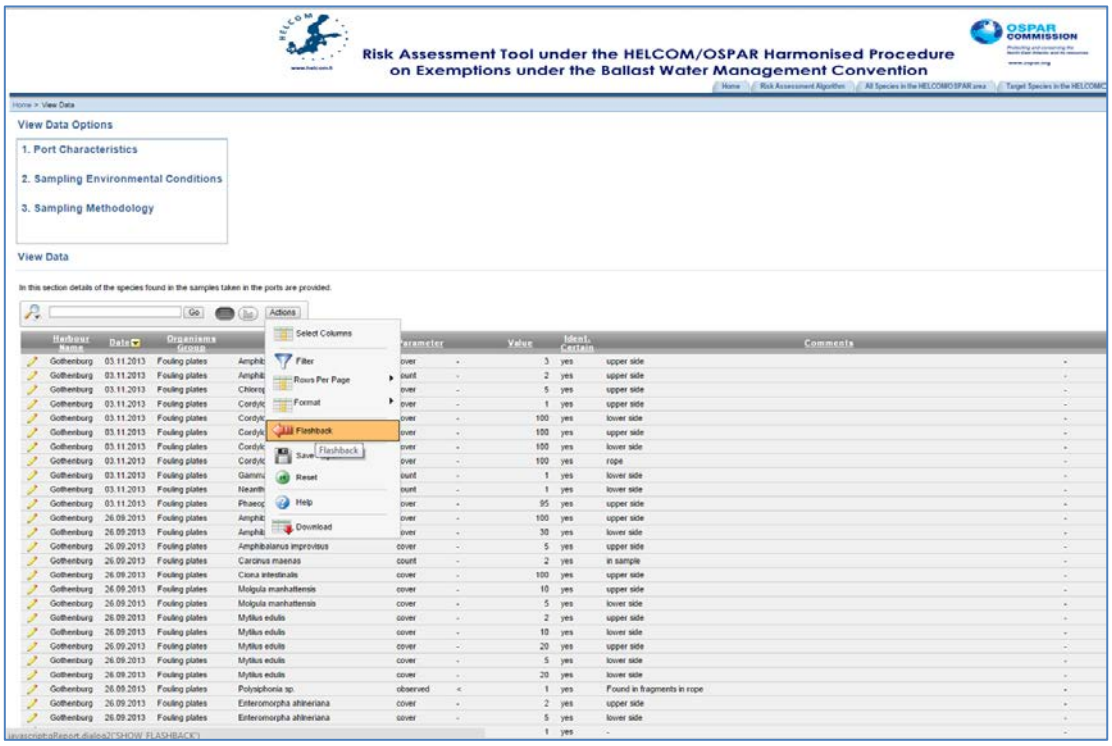

Risk Assessment Tool under the HELCOM/OS
on Exemptions under the Ballast Water M
Home > View Data
View Data Options
1. Port Characteristics
2. Sampling Environmental Conditions
3. Sampling Methodology
View Data
In this section details of the species found in the samples taken in the ports are provided.
Go
Actions
Group By Sort
Column
Direction
Null Sorting
1 Organisms
Group Ascending Nulls Always Last
2 Species Name Ascending Nulls Always Last
3 - Select Column - Ascending Default
4 - Select Column - Ascending Default
5 - Select Column - Ascending Default
6 - Select Column - Ascending Default
Cancel
Apply
Edit Group By
Organisms Group
Species Name
Count Organisms Group
Count Species Name
Count *


Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure
on Exemptions under the Ballast Water Management Convention
View Data Options
1. Port Characteristics
2. Sampling Environmental Conditions
3. Sampling Methodology
View Data
In this section details of the species found in the samples taken in the ports are provided.
Actions
Edit Group By

Organisms Group	Species Name	Count Organisms Group	Count Species Name	Count *
Benthos	Abra alba	5	5	5
Benthos	Abra prismatica	7	7	7
Benthos	Acarina spp.	3	3	3
Benthos	Amphibalanus improvisus	18	18	18
Benthos	Anthozoa	4	4	4
Benthos	Aphelochaeta marioni	1	1	1
Benthos	Aphelochaeta sp.	2	2	2
Benthos	Balanus crenatus	3	3	3
Benthos	Baltidrilus costatus	3	3	3
Benthos	Battersia arctica	1	1	1
Benthos	Boccardiella ligerica	9	9	9
Benthos	Cerastoderma edule	2	2	2
Benthos	Cerastoderma glaucum	2	2	2
Benthos	Chironomidae spp.	26	26	26
Benthos	Cladophora glomerata	3	3	3
Benthos	Corbula gibba	5	5	5
Benthos	Cordylophora caspia	25	25	25
Benthos	Corophium sp.	1	1	1
Benthos	Corophium volutator	16	16	16
Benthos	Crangon crangon	1	1	1
Benthos	Cyanophthalma obscura	12	12	12
Benthos	Cyathura carinata	1	1	1
Benthos	Diptera sp.	1	1	1
Benthos	Electra crustulenta	9	9	9
Benthos	Erichonius rubricornis	1	1	1
Benthos	Gammarus salinus	1	1	1
Benthos	Gammarus sp.	4	4	4
Benthos	Gammarus zaddachi	1	1	1
Benthos	Harmothoe imbricata	2	2	2

4.10 Previous viewing of data

A flashback query enables the user to view the data as it existed at a previous point in time. The default amount of time that users can flashback is three hours (see the screen shoot).

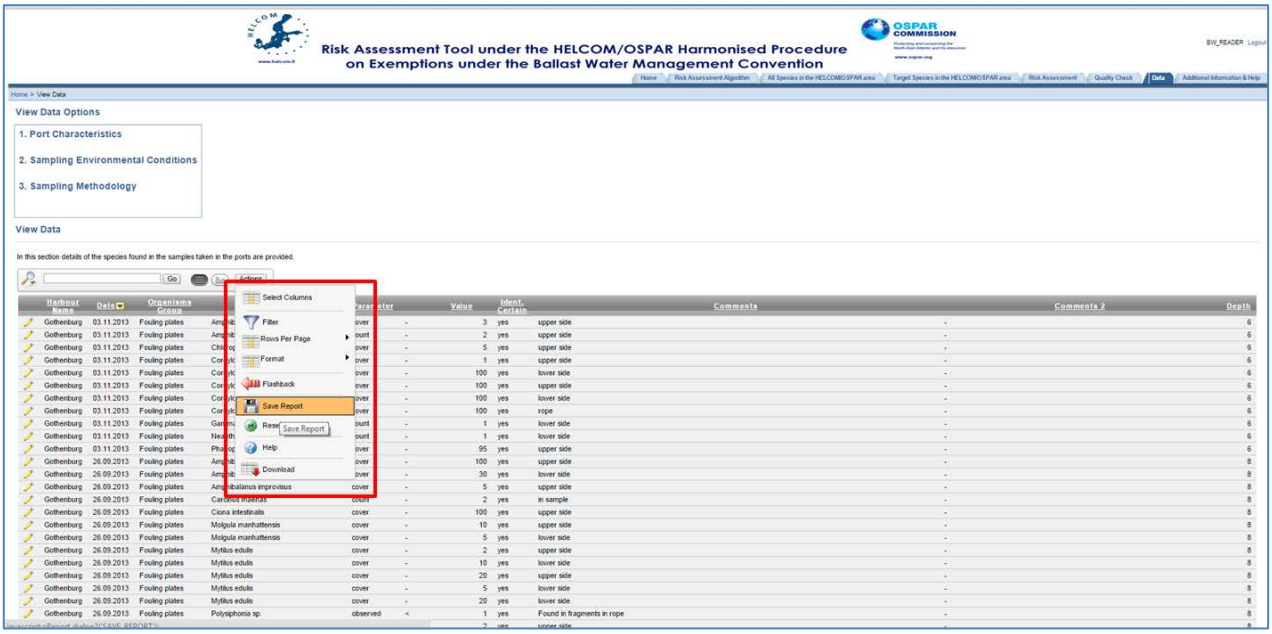


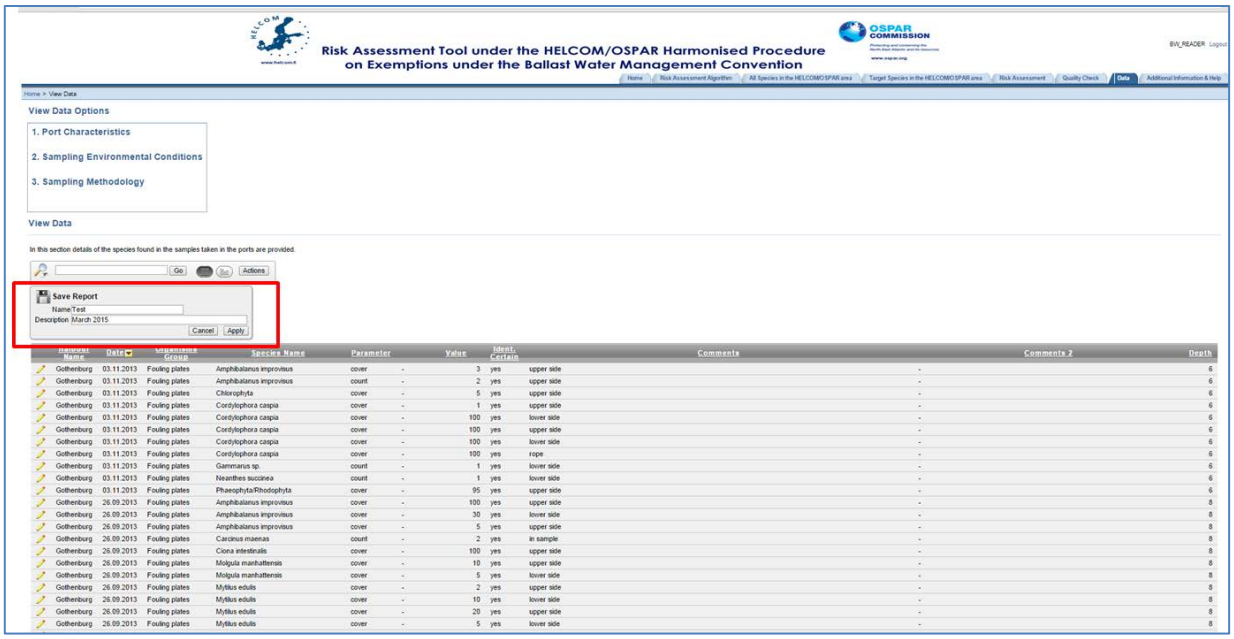
4.11 Obtaining data report

Users can save customized reports for a future use. A name and optional description is to be provided. The report can be accessible to all users. Four types of interactive reports can be saved:

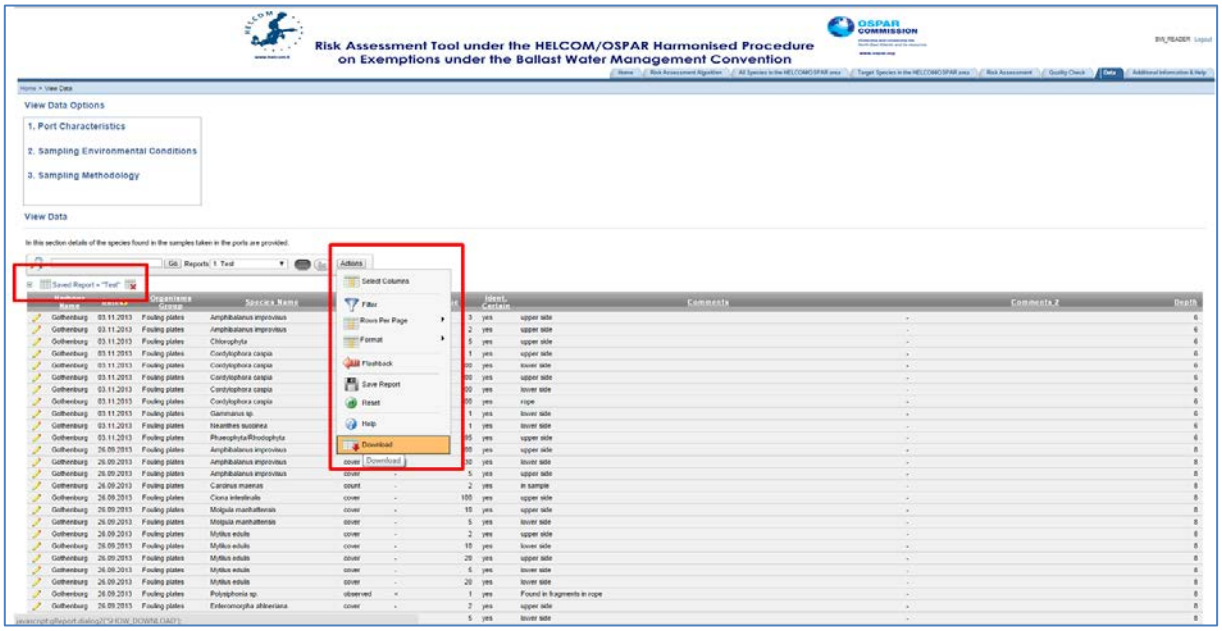
- Primary Default (Developer Only): it is the report initially displayed. It cannot be renamed or deleted;
- Alternative Report (Developer Only): it enables developers to create multiple report layouts. They can save, rename, or delete them;
- Public Report (End user): only the end user who created it can save, rename or delete it, whereas other users can only view and save the layout as another report;
- Private Report (End user): only the end user who created the report can view, save, rename or delete it.

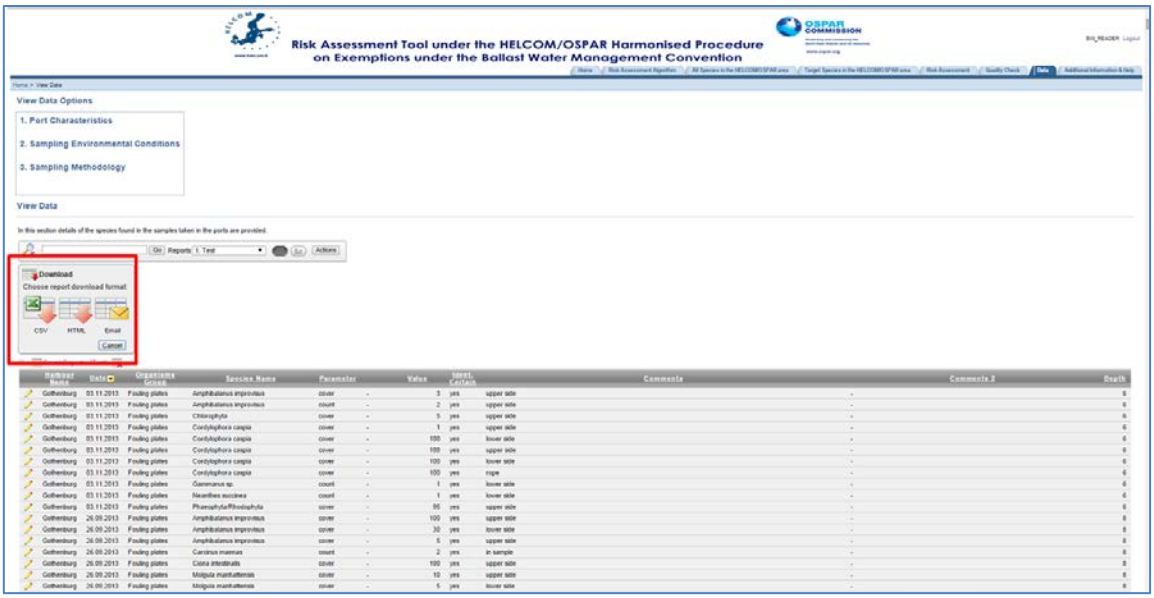
When saving customized reports, a Reports selector displays in the Search bar to the left of the Rows selector, if this feature is enabled (see screen shots below).



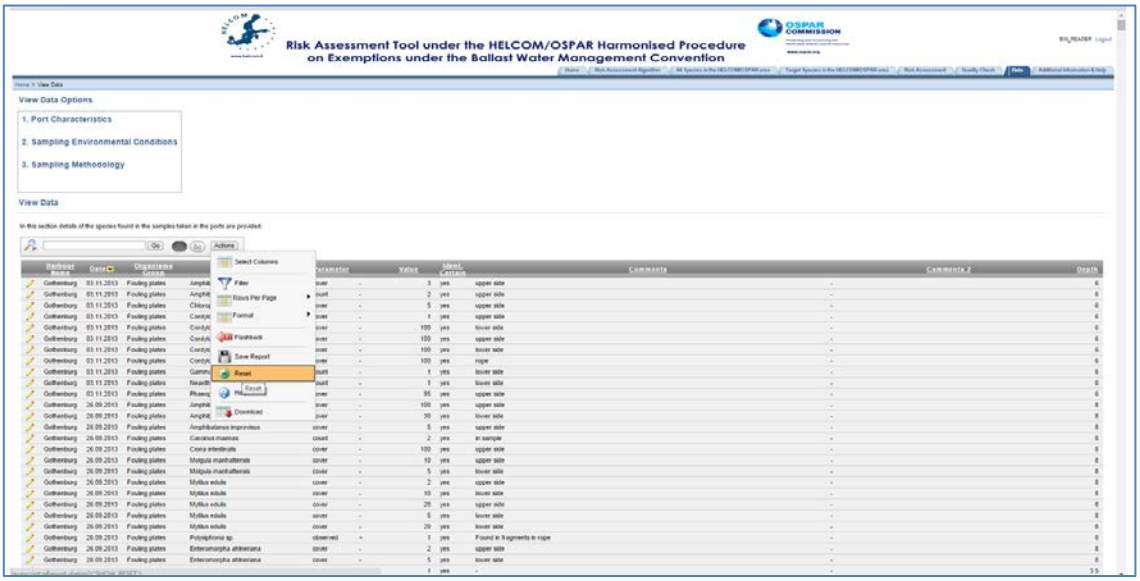


Once the report is saved, users may want to download it. Three different download formats options are available: CSV, HTML and e-mail (see screen shots below).





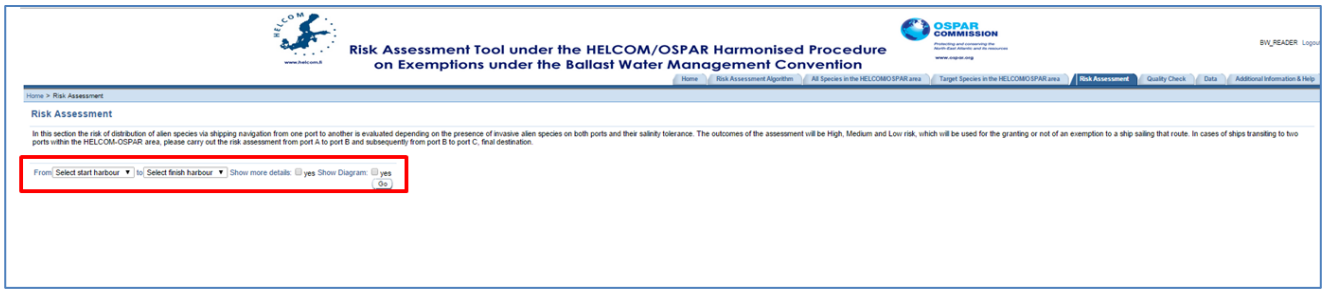
In case the user wants to reset the report back to the default settings, removing any customizations previously made, the option Reset is available (see screen shot below).



5. Performing the Risk Assessment

Based on the risk assessment algorithm contained in the homonymous tab, the risk of distribution of alien species via shipping navigation from one port to another in the HELCOM-OSPAR area is evaluated depending on the presence of invasive alien species on both ports and their salinity tolerance. The outcomes of the assessment will be High, Medium and Low risk, which will be used for the granting or not of an exemption to a ship sailing that route. In cases of ships transiting to two ports within the HELCOM-OSPAR area, please carry out the risk assessment from port A to port B and subsequently from port B to port C, final destination.

The user is to select from the list of ports available both the port of origin and the destination port. Then, it can select having a complete explanation of the reasoning behind the risk assessment, or only the result of such assessment. In the example, see screen shots, the shipping route selected is from Muuga to Gothenburg and all information on the risk assessment is shown (show more details & diagram).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Risk Assessment
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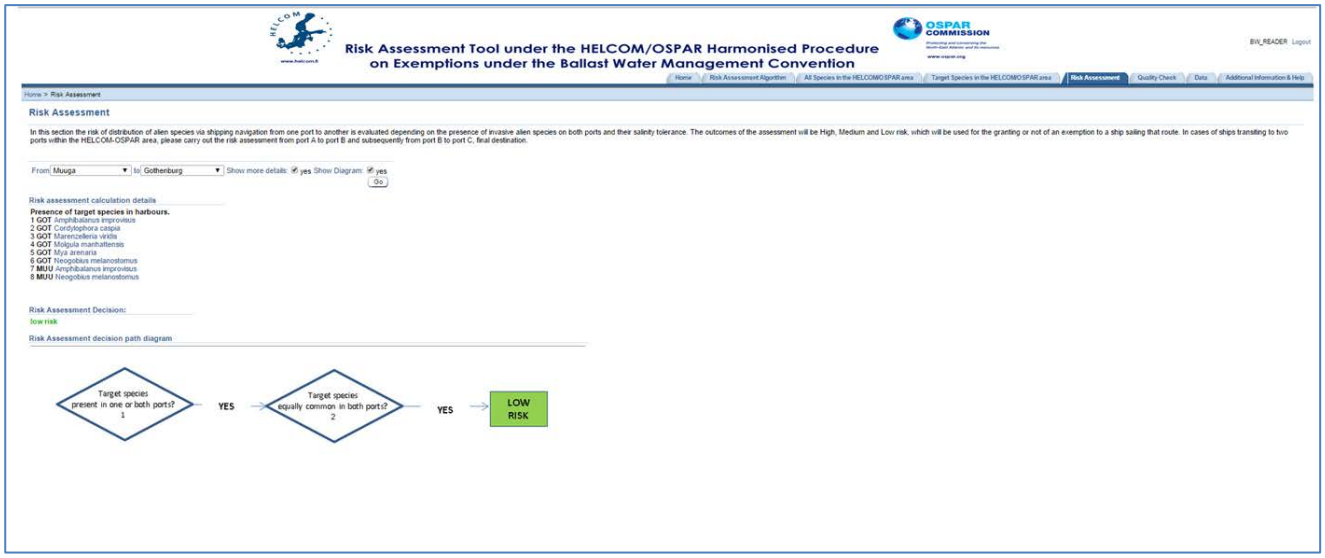
From Select start harbour to Select finish harbour Show more details: yes Show Diagram: yes
Go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From Muuga to Gothenburg Show more details: yes Show Diagram: yes
Go
Risk assessment calculation details
Presence of target species in harbours.
1 GOT Amphibalanus improvisus
2 GOT Cordylophora caspia
3 GOT Marenzelleria viridis
4 GOT Molgula manhattensis
5 GOT Mya arenaria
6 GOT Neogobius melanostomus
7 MUU Amphibalanus improvisus
8 MUU Neogobius melanostomus
Risk Assessment Decision:
low risk
Risk Assessment decision path diagram
Target species present in one or both ports? 1
YES
Target species equally common in both ports? 2
YES
LOW RISK

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